AMTS.Cattle™.Pro Users' Manual

For AMTS.Cattle™.Pro

November, 2013

1.0 Introduction

AMTS.Cattle™.Pro is an implementation of the CNCPS ver. 6.1 for everyday use by nutritionists. The primary audiences for **.Pro** are: private consultants, technical nutritionists within a company, and advanced nutritionists within a company technical team. It was designed to work with multiple groups of cattle within the same farm file.

As a sole implementation, **.Pro** is the most flexible of the **AMTS.Cattle™** product line. In addition to multiple groups within the farm file, recipes can be shared between groups. For example, in a dairy setting where a one-group TMR is utilized, separate cattle groups can be created and identified by group (e.g. early lactation, high cows, low cows, etc.). The recipe can be assigned to each of these groups to evaluate diet adequacy across the herd. Changes made to a recipe affect all groups fed that recipe.

In a company setting, where the technical team is leading a team of field nutritionists, **.Pro** offers a great deal of control. **AMTS.Cattle™.Pro** is used to create Template Files. Within a company, the technical team can create different templates (by mill, geographical region, dairy or beef, etc.) utilizing local data and pricing for feeds (on- and off-farm feeds). These templates can be time stamped so that users can update recipe and composite pricing when a new template is loaded. Additionally, these template files can contain additional information making them useable only by authorized users. This additional information includes: logos, screen settings (what is shown for results and order of results), company contact information etc.

A common file structure is utilized among all **AMTS.Cattle™** products with **.Pro** being the common denominator. **AMTS.Cattle™.Pro** can read and write **AMTS.Cattle™.Dairy** files thus enabling the technical team to evaluate diets and make recommendations with no repetitive data input. Additionally, **AMTS.Cattle™.Pro** can read and write CNCPS v. 6.1 files.

AMTS.Cattle™.Pro also introduces a new non-linear optimizer. This optimizer is a genetic algorithm we have licensed. **AMTS.Cattle™.Pro** is the first program within animal nutrition to introduce this advanced optimization methodology. In addition to formulating for least cost, the user can select to maximize income over feed costs.

1.1 AMTS Tips and Tricks

Throughout this manual you will notice our **AMTS** Logo. This sign will alert you that the information following will be especially helpful as you use the **AMTS.Cattle™** program line. We may use this to point out tips or tricks that will help you as you navigate the program, to assist you in inputting information using the right calculations, or to highlight a feature that may be especially helpful.

1.2 System Requirements

AMTS.Cattle™.Pro requires Windows 98 SE or later and the Microsoft .net Framework 3.5 or later installed. During setup, your system will be checked to determine if any additional files are required. If .NET framework 3.5 is NOT installed, you will be prompted and be taken to a Microsoft download site for this. Installation of .NET on computers running Microsoft Vista has been problematic. Windows 7 computers using a 64 bit processor has two different versions of the .NET Framework. **AMTS** programs require that the full .NET Framework be installed. To install the .NET Framework 4 (for both x86 and x64 systems) follow this link:
http://go.microsoft.com/fwlink/?LinkId=181013
Contact Microsoft if you encounter errors associated with .NET.

1.3 Install AMTS.Pro

You can download **.Pro** from the **AMTS** website

http://agmodelsystems.com/sw_updates/AMTS.Cattle.Professional%20v.%203.2%20Setup.exe

Choose "Run" (or)
"Save" the file to your desktop and double click on the **AMTS.Cattle™.Pro.exe** file.

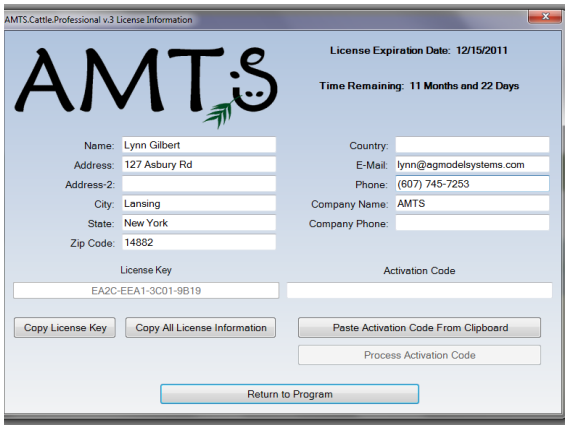
Follow the prompts throughout installation.

1.4 Installing the Non-linear Optimizer

When finished downloading the program, download the non-linear optimizer: in the **Agmodelsystems.com** web page, click on *Optimizer Full Version*

- Choose *Run.*
- Follow prompts.
- Enter your name and company.
- Contact Caroline@agmodelsystems.com for a serial number and key code for the advanced optimizer.

1.5 Program Registration



When you start the program, click on "Continue without Activation". You have 30 days to use the program prior to activation. If after 30 days, you wish to purchase **.Pro** (or you fail to register .**Cattle™.Pro** within 30 days), contact **AMTS** (caroline@agmodelsystems.com) and we can get you up and running again.

At the time of purchase, select *Fill Out Activation Form* button, complete the form, copy it to the clipboard and paste the contents into an email to caroline@agmodelsystems.com. If you do not see a button taking you to the registration screen, follow these steps:

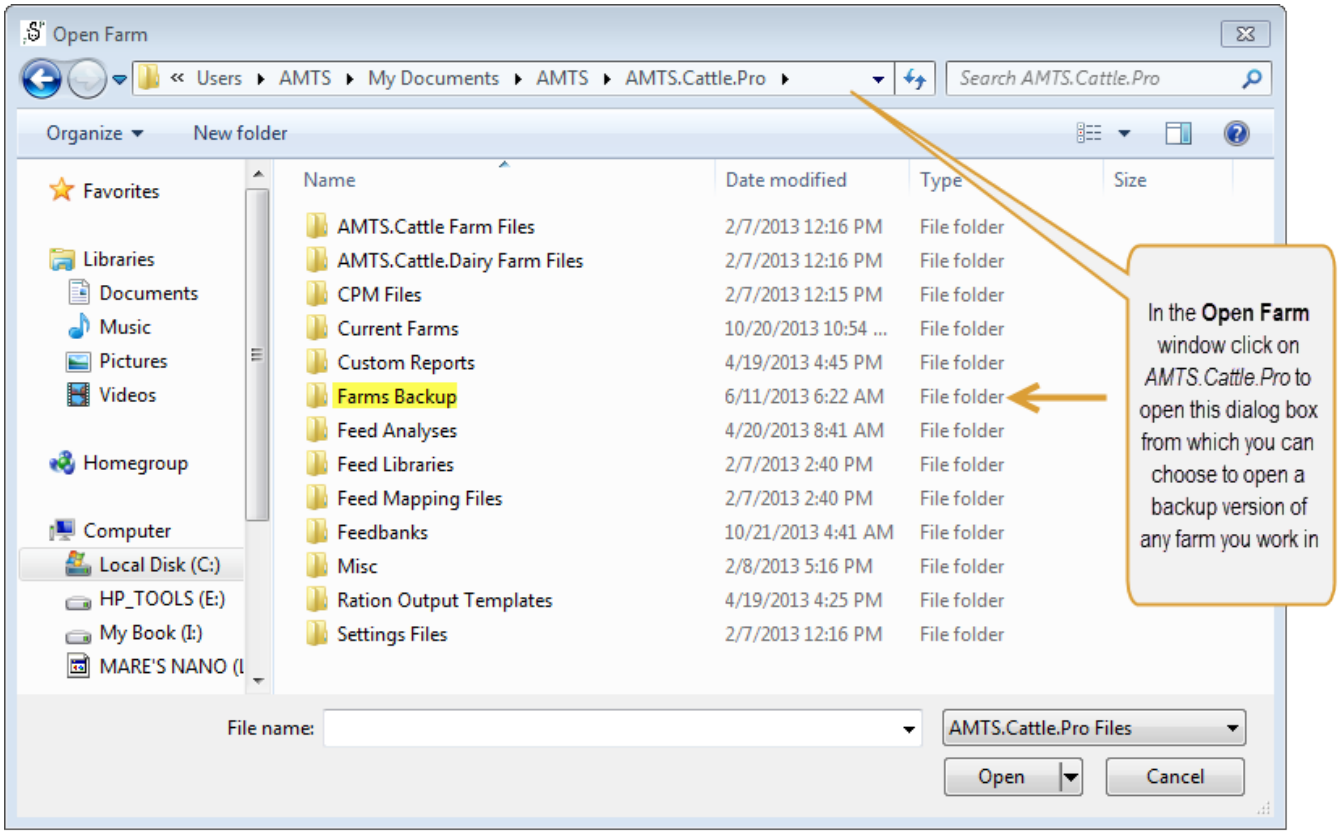
Step 1. Choose *Help* in the pull down screen.
Step 2. About **AMTS.Cattle. Professional**
Step 3. Click on button *View License Details*

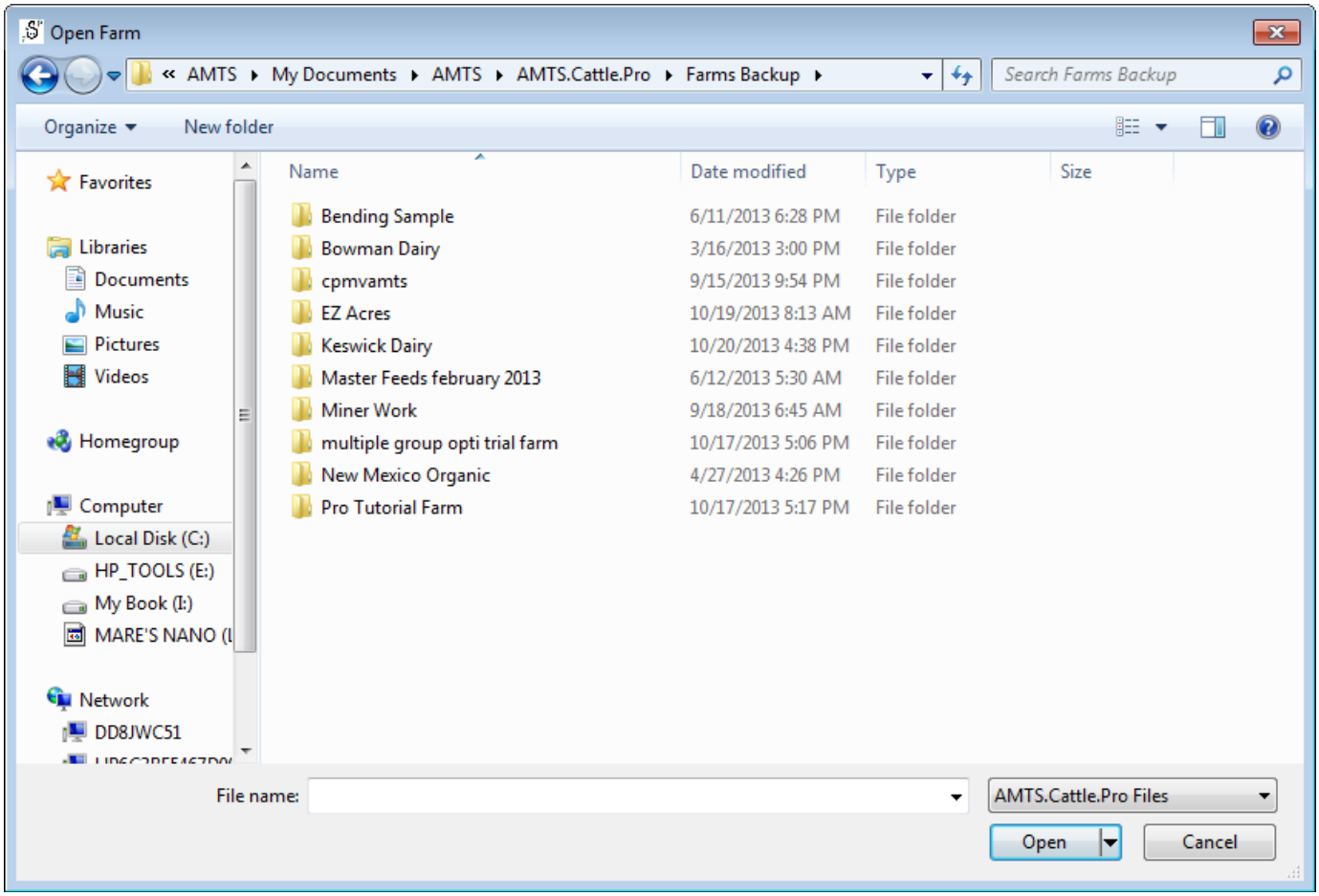
Step 4. Fill out activation form
Step 5. Copy to Clipboard.
Step 6. Open your Email program, paste the form
Step 7. When the unlock code is sent back, copy and paste the code into the blank box.
Step 8. Click button, *Process Activation Code*

1.6 Saving Your Work

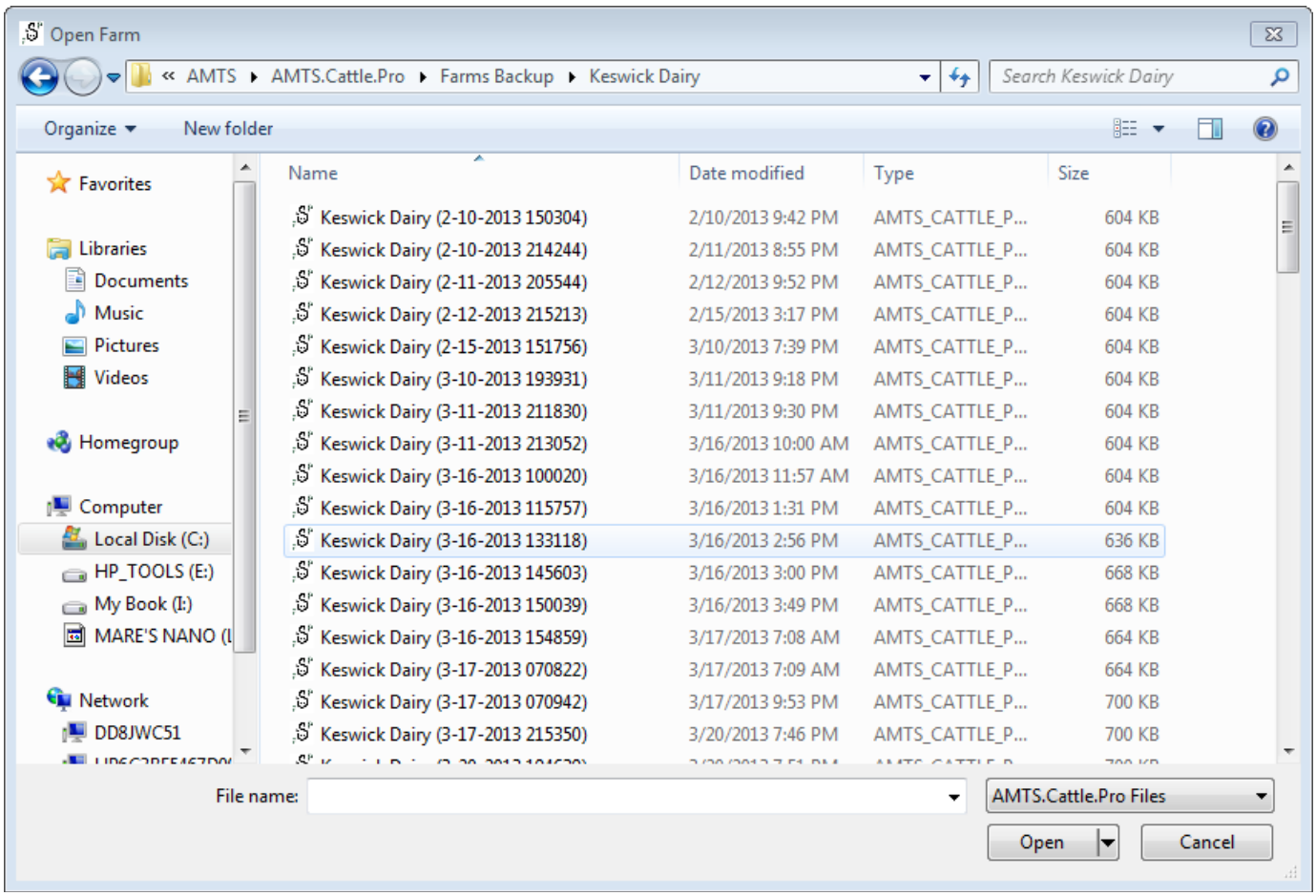
As with any **AMTS** product, there is no reason to worry about saving a file. Once an input is made, it is written to the file, automatically saving the entered data. When you open a file, as with other **AMTS** products, a copy of the farm file you are opening is placed in the Farms Backup/*farm name* folder. The file you end up working with is renamed automatically with the time and date stamp when opened as part of the name. You can always go back and open an old file just by browsing to the Farms Backup Folder.

It is possible to turn off the Auto- Save Feature. This allows you to open a farm, play around with some "what-if" scenarios, and close the farm without incorporating any of the changes in to the actual farm file. You *can* save the changes if you want, manually. We will explain how to change from auto save to manual save in the section on *Settings*. See Manual Page 21.

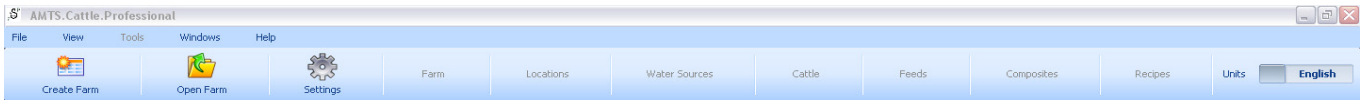

Open Farm
« Users ▸ AMTS ▸ My Documents ▸ AMTS ▸ AMTS.Cattle.Pro ▸
Search AMTS.Cattle.Pro
Organize
New folder
Favorites
Libraries
Documents
Music
Pictures
Videos
Homegroup
Computer
Local Disk (C:)
HP_TOOLS (E:)
My Book (I:)
MARE'S NANO (I
Name
Date modified
Type
Size
AMTS.Cattle Farm Files 2/7/2013 12:16 PM File folder
AMTS.Cattle.Dairy Farm Files 2/7/2013 12:16 PM File folder
CPM Files 2/7/2013 12:15 PM File folder
Current Farms 10/20/2013 10:54 ... File folder
Custom Reports 4/19/2013 4:45 PM File folder
Farms Backup 6/11/2013 6:22 AM File folder
Feed Analyses 4/20/2013 8:41 AM File folder
Feed Libraries 2/7/2013 2:40 PM File folder
Feed Mapping Files 2/7/2013 2:40 PM File folder
Feedbanks 10/21/2013 4:41 AM File folder
Misc 2/8/2013 5:16 PM File folder
Ration Output Templates 4/19/2013 4:25 PM File folder
Settings Files 2/7/2013 12:16 PM File folder
In the Open Farm window click on AMTS.Cattle.Pro to open this dialog box from which you can choose to open a backup version of any farm you work in
File name:
AMTS.Cattle.Pro Files
Open
Cancel



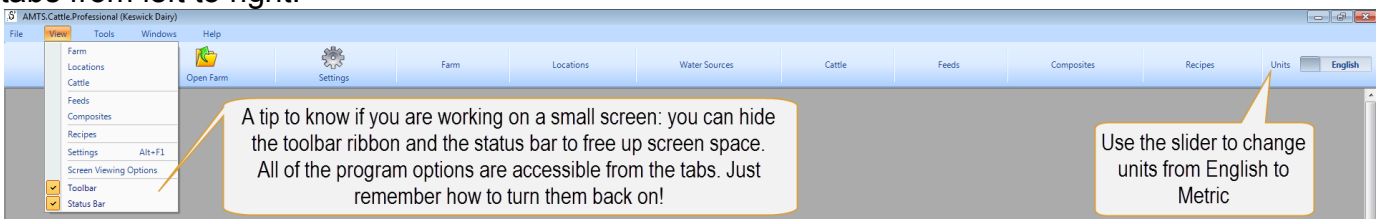
You can then select that Farm and see all the old files annotated by date. Holding the mouse over the farm will reveal a date and time stamp. If you make a major mistake in a farm, you can go back to a previous copy of the farm.


Open Farm
AMTS ▸ AMTS.Cattle.Pro ▸ Farms Backup ▸ Keswick Dairy
Search Keswick Dairy
Organize
New folder
Favorites
Libraries
Documents
Music
Pictures
Videos
Homegroup
Computer
Local Disk (C:)
HP_TOOLS (E:)
My Book (I:)
Network
DD8JWC51
Name
Date modified
Type
Size
Keswick Dairy (2-10-2013 150304) 2/10/2013 9:42 PM AMTS_CATTLE_P... 604 KB
Keswick Dairy (2-10-2013 214244) 2/11/2013 8:55 PM AMTS_CATTLE_P... 604 KB
Keswick Dairy (2-11-2013 205544) 2/12/2013 9:52 PM AMTS_CATTLE_P... 604 KB
Keswick Dairy (2-12-2013 215213) 2/15/2013 3:17 PM AMTS_CATTLE_P... 604 KB
Keswick Dairy (2-15-2013 151756) 3/10/2013 7:39 PM AMTS_CATTLE_P... 604 KB
Keswick Dairy (3-10-2013 193931) 3/11/2013 9:18 PM AMTS_CATTLE_P... 604 KB
Keswick Dairy (3-11-2013 211830) 3/11/2013 9:30 PM AMTS_CATTLE_P... 604 KB
Keswick Dairy (3-11-2013 213052) 3/16/2013 10:00 AM AMTS_CATTLE_P... 604 KB
Keswick Dairy (3-16-2013 100020) 3/16/2013 11:57 AM AMTS_CATTLE_P... 604 KB
Keswick Dairy (3-16-2013 115757) 3/16/2013 1:31 PM AMTS_CATTLE_P... 604 KB
Keswick Dairy (3-16-2013 133118) 3/16/2013 2:56 PM AMTS_CATTLE_P... 636 KB
Keswick Dairy (3-16-2013 145603) 3/16/2013 3:00 PM AMTS_CATTLE_P... 668 KB
Keswick Dairy (3-16-2013 150039) 3/16/2013 3:49 PM AMTS_CATTLE_P... 668 KB
Keswick Dairy (3-16-2013 154859) 3/17/2013 7:08 AM AMTS_CATTLE_P... 664 KB
Keswick Dairy (3-17-2013 070822) 3/17/2013 7:09 AM AMTS_CATTLE_P... 664 KB
Keswick Dairy (3-17-2013 070942) 3/17/2013 9:53 PM AMTS_CATTLE_P... 700 KB
Keswick Dairy (3-17-2013 215350) 3/20/2013 7:46 PM AMTS_CATTLE_P... 700 KB
File name:
AMTS.Cattle.Pro Files
Open
Cancel

2.0 Program Navigation



To familiarize you with .**Cattle™.Pro** we will explore the functions of the ribbon bar buttons and tabs from left to right.

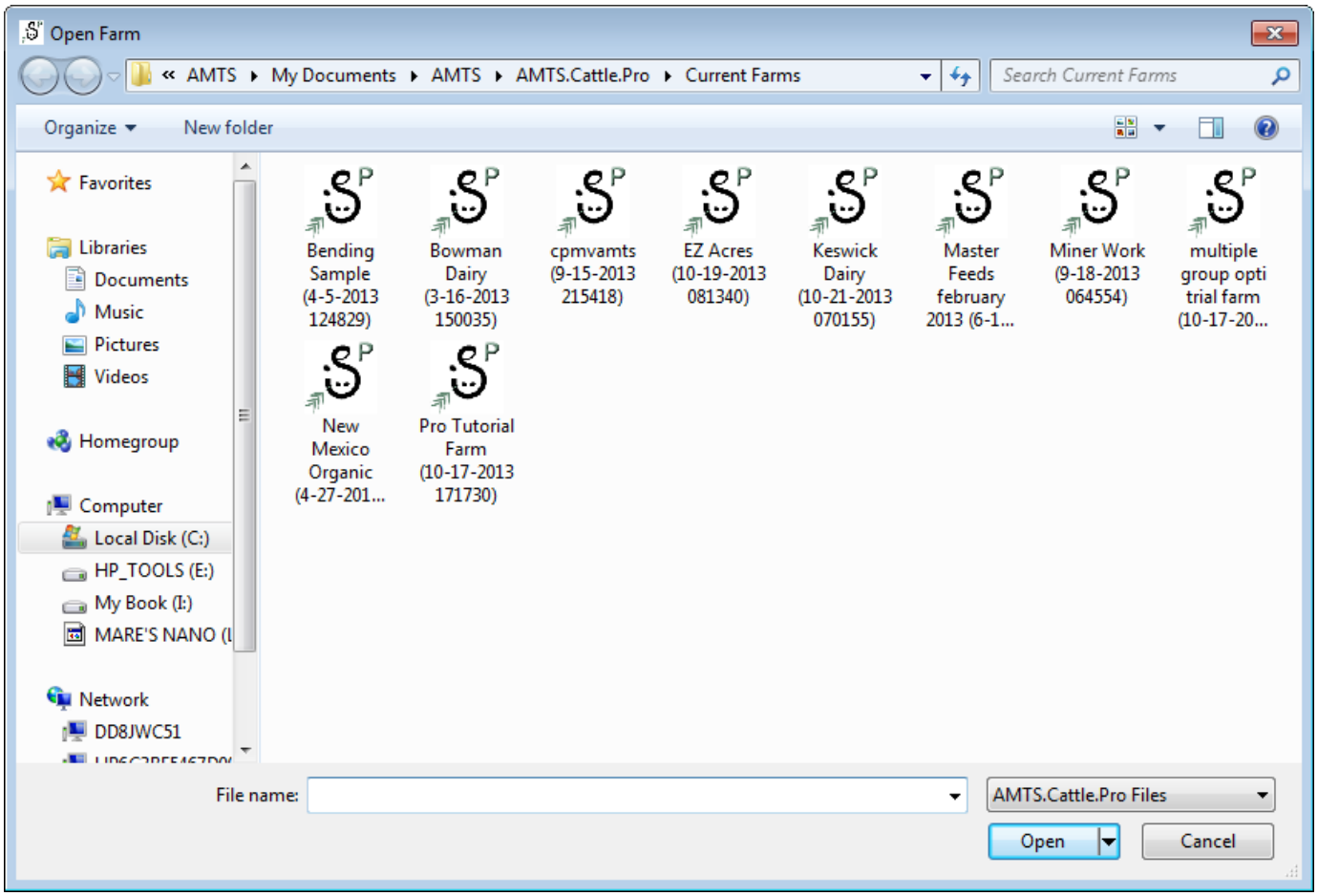

A tip to know if you are working on a small screen: you can hide the toolbar ribbon and the status bar to free up screen space. All of the program options are accessible from the tabs. Just remember how to turn them back on!
Use the slider to change units from English to Metric

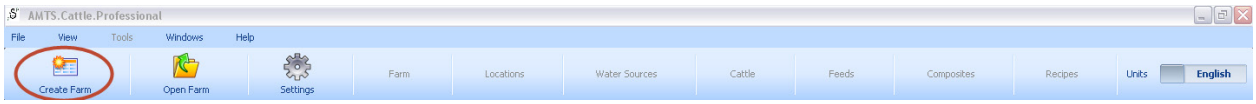
You can select data entry screens and move around the program using the drop down menu (*File, View, Tools, Windows, Help*) or the icons and tabs in the ribbon bar at the top of the screen. Also notice that there is a sliding

switch on the right top. The *Units* slide toggles the program units between metric and English.

The first time you start the program; enter an alpha-numeric User ID with no spaces or characters. You can change your User ID later. You will not need to remember the User ID. It is there so you can identify feeds that you create and will be used if you share diets with other nutritionists.

When you start **.Pro**, you will see the *Open Farm* Dialog box. If you are selecting a previously created farm, select that file.



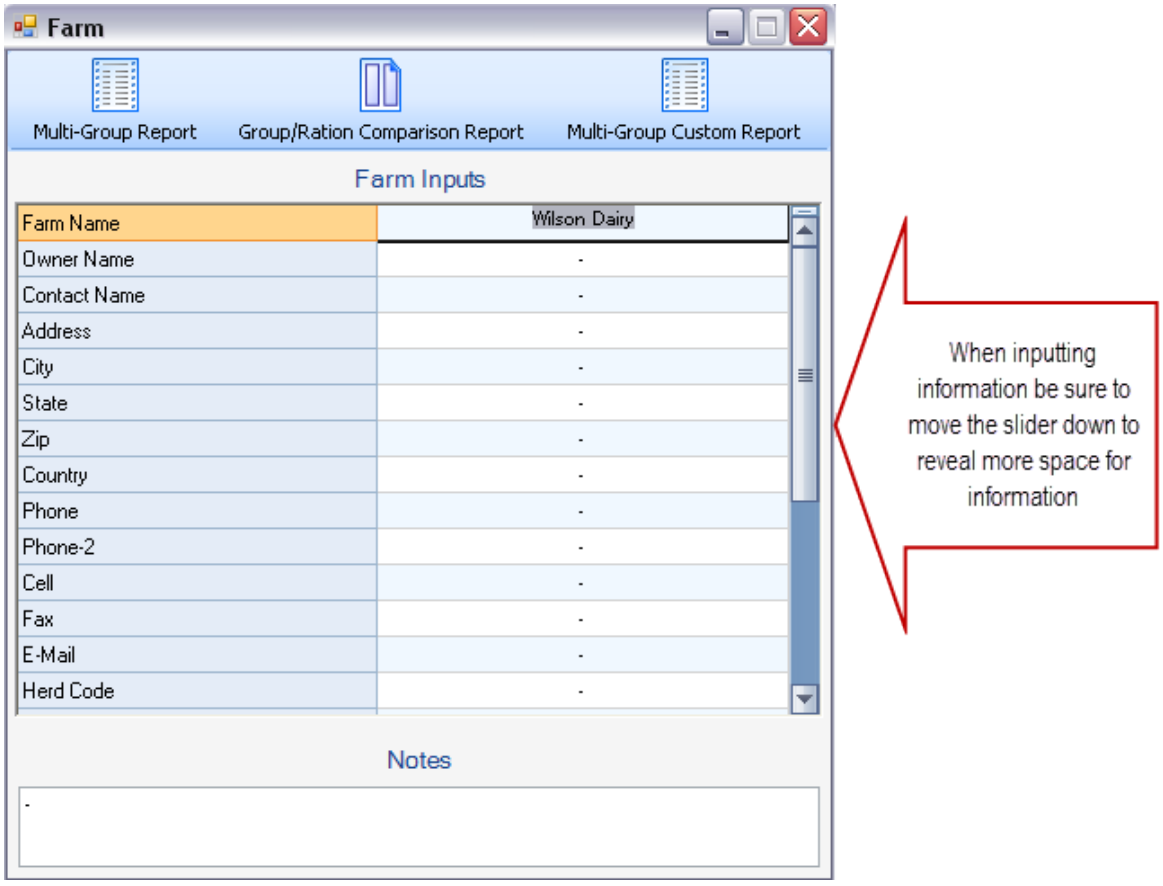


3.0 Create a Farm

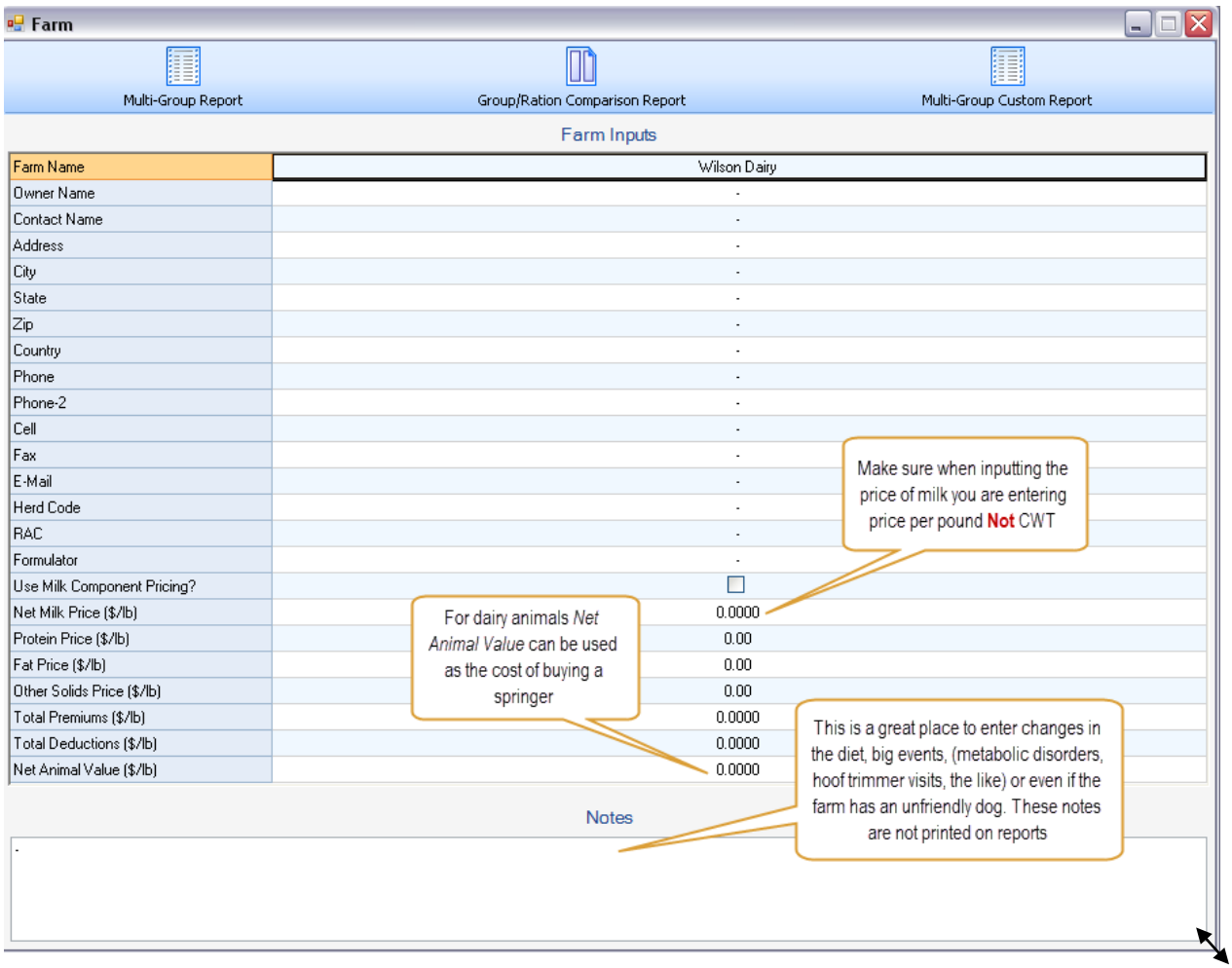
When you open **.Pro** the *Open Farm* window will open, by default. If you are creating a new farm, click on *Cancel*, and then *Create New Farm* on the Toolbar.

Choose a name for your new farm and click *OK*.

The following form box will appear.

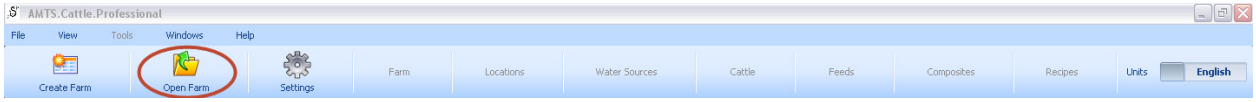


The name you entered for the farm will be filled in and you will have the opportunity to fill in the rest, including the option to use component pricing.



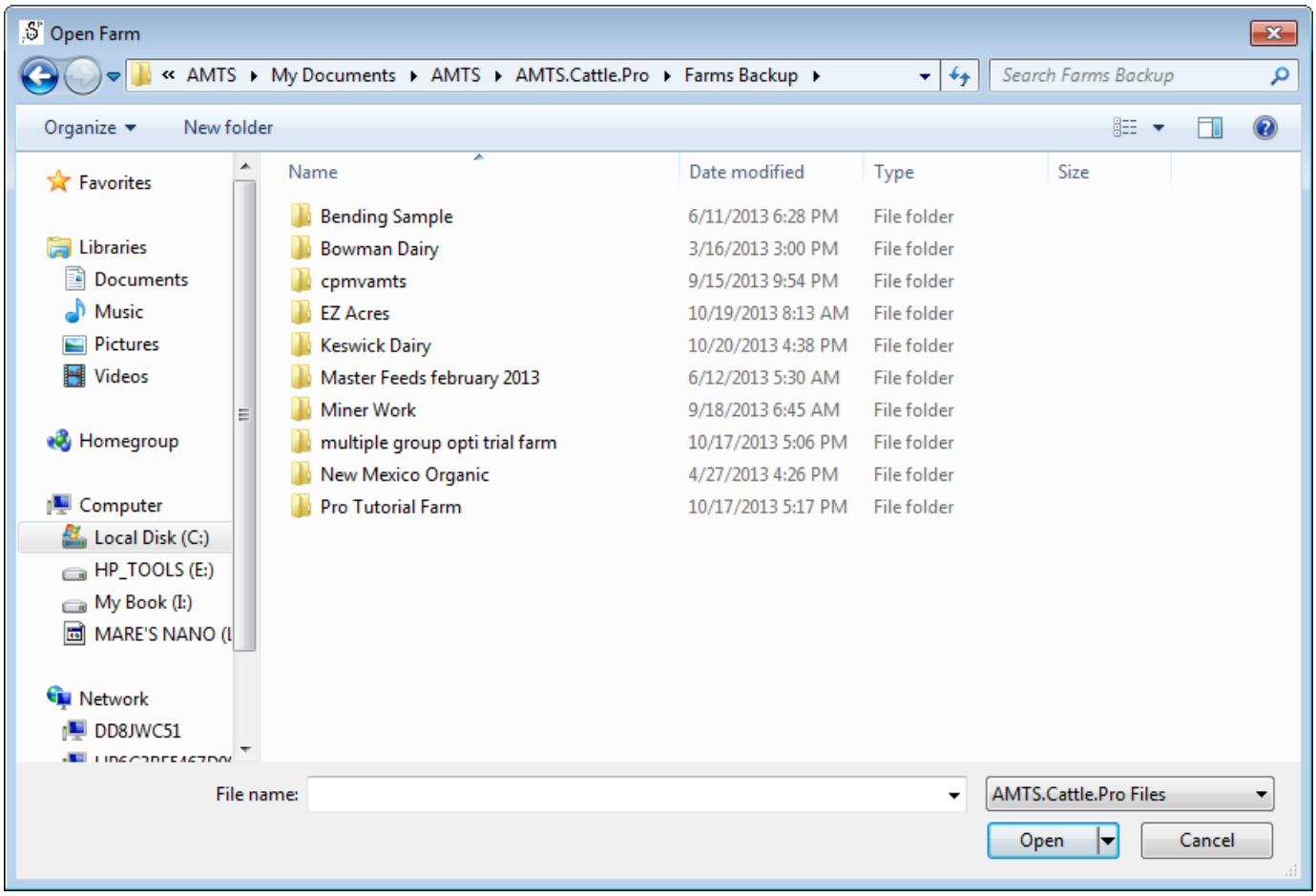
The information box on your screen can be clicked on in the lower right corner and dragged to resize it so that all information can be seen.

Input Tip If a Springer sold for $1200 and weighed 1200 lbs the input would be $1. 00. That allows you to look at IOFC (Income Over Feed Cost) for growing animals. ME or MP allowable gain (whichever is lower) x value = income.

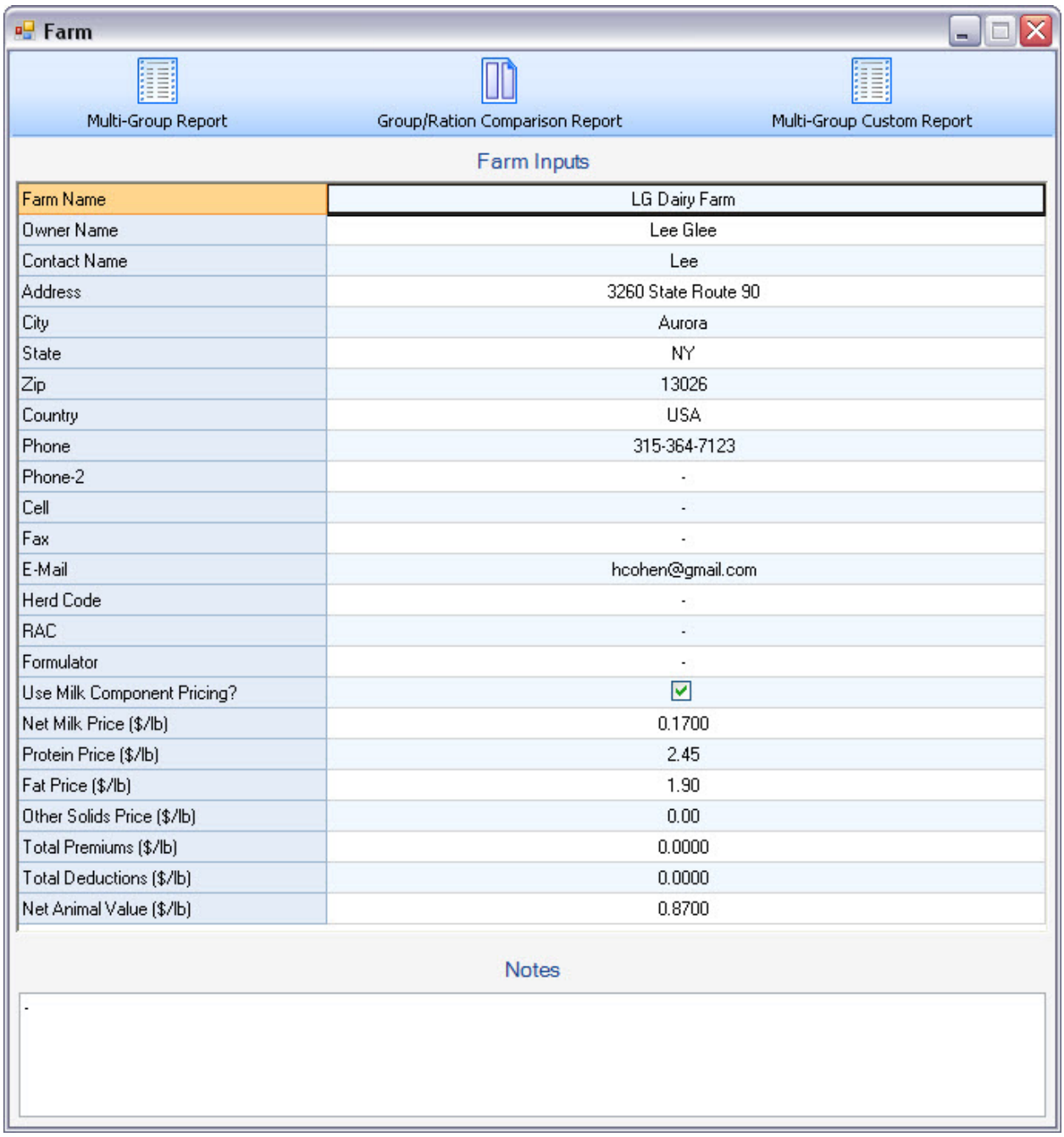


4.0 Open Farm

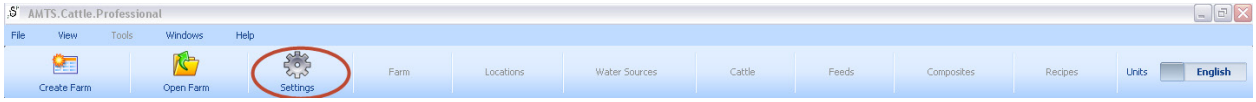
In subsequent uses of .**Cattle™.Pro,** you will be working in farms you have already created. To open a farm, click on *Open Farm* in the ribbon bar; this will bring up a dialog box with the most recent copy of each farm you have created.



Highlight the farm you want to work with and click open. That will bring up the following information box.



You can use this box to input farm information, change existing information, or launch reports about that farm.

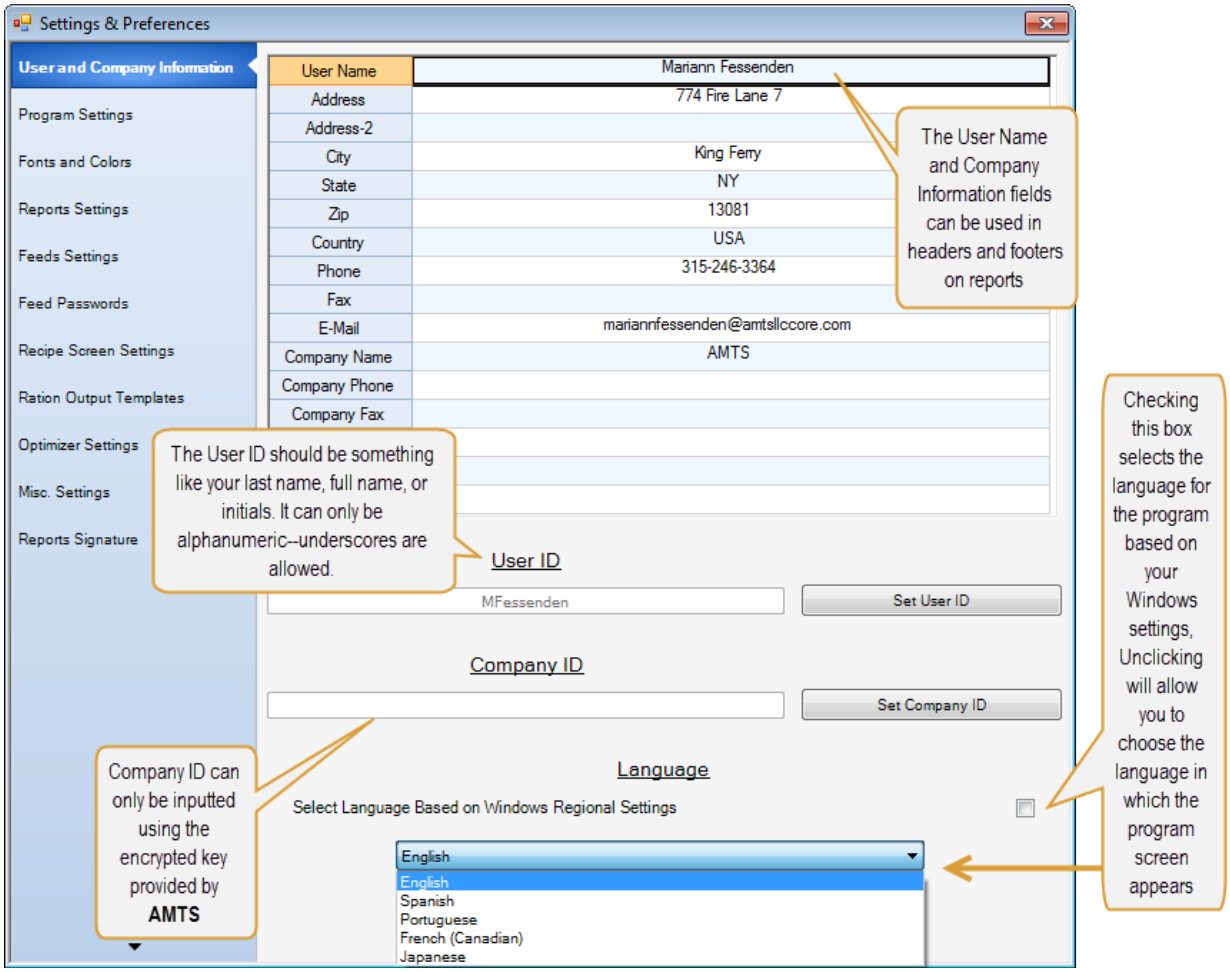


5.0 Settings

The settings you select here will carry over to all farm files that you open, create or import from CPM, CNCPS 6.1 or **AMTS** programs. You can change these at any time. The information you input in the settings button will dictate the look of reports you generate, establish the unit and refinement of the information you input for feeds, and allows you to control some of the calculations the program makes as you work within it.

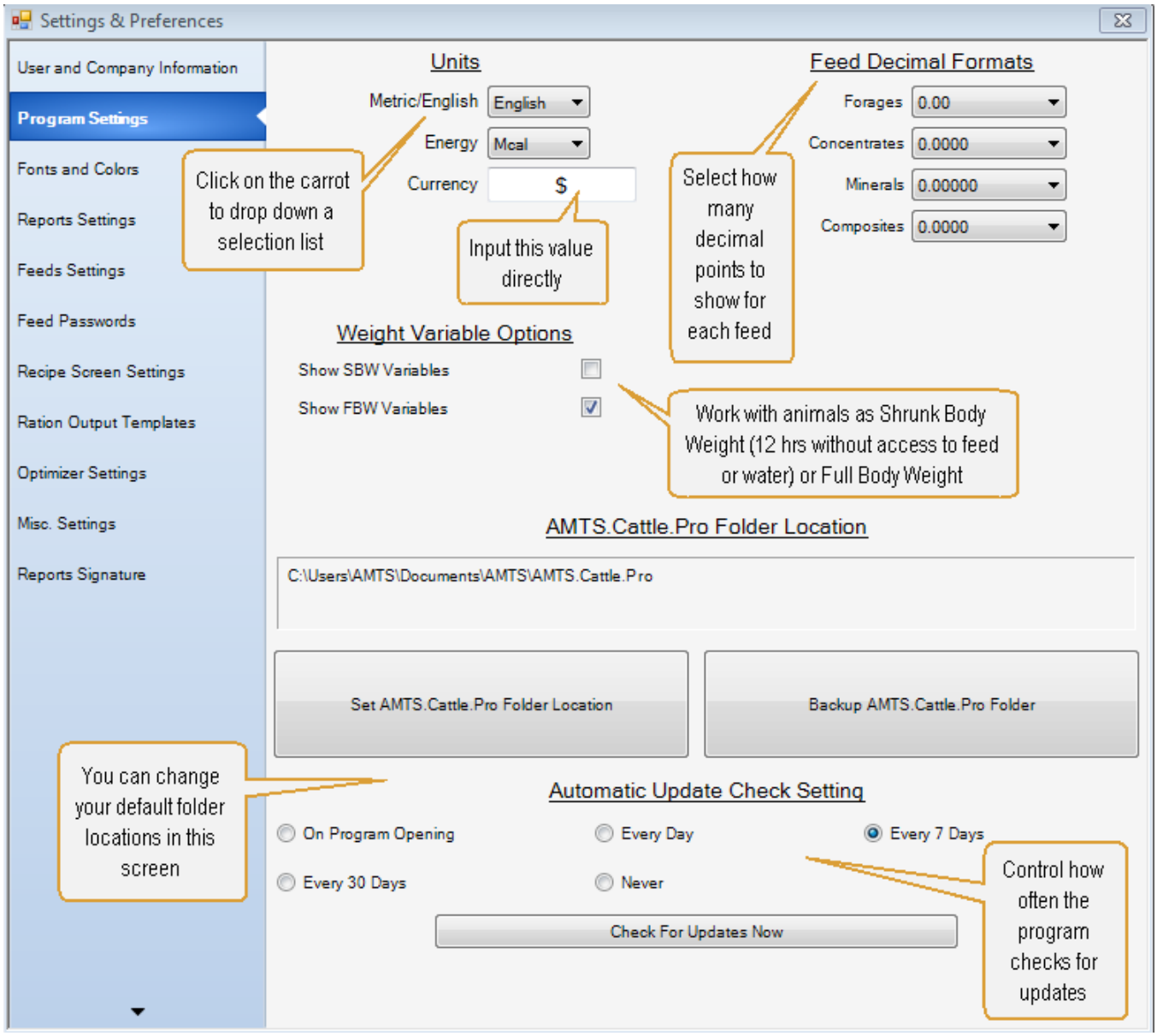
5.1 User and Company Information

Here you can set or change your User ID and Company ID



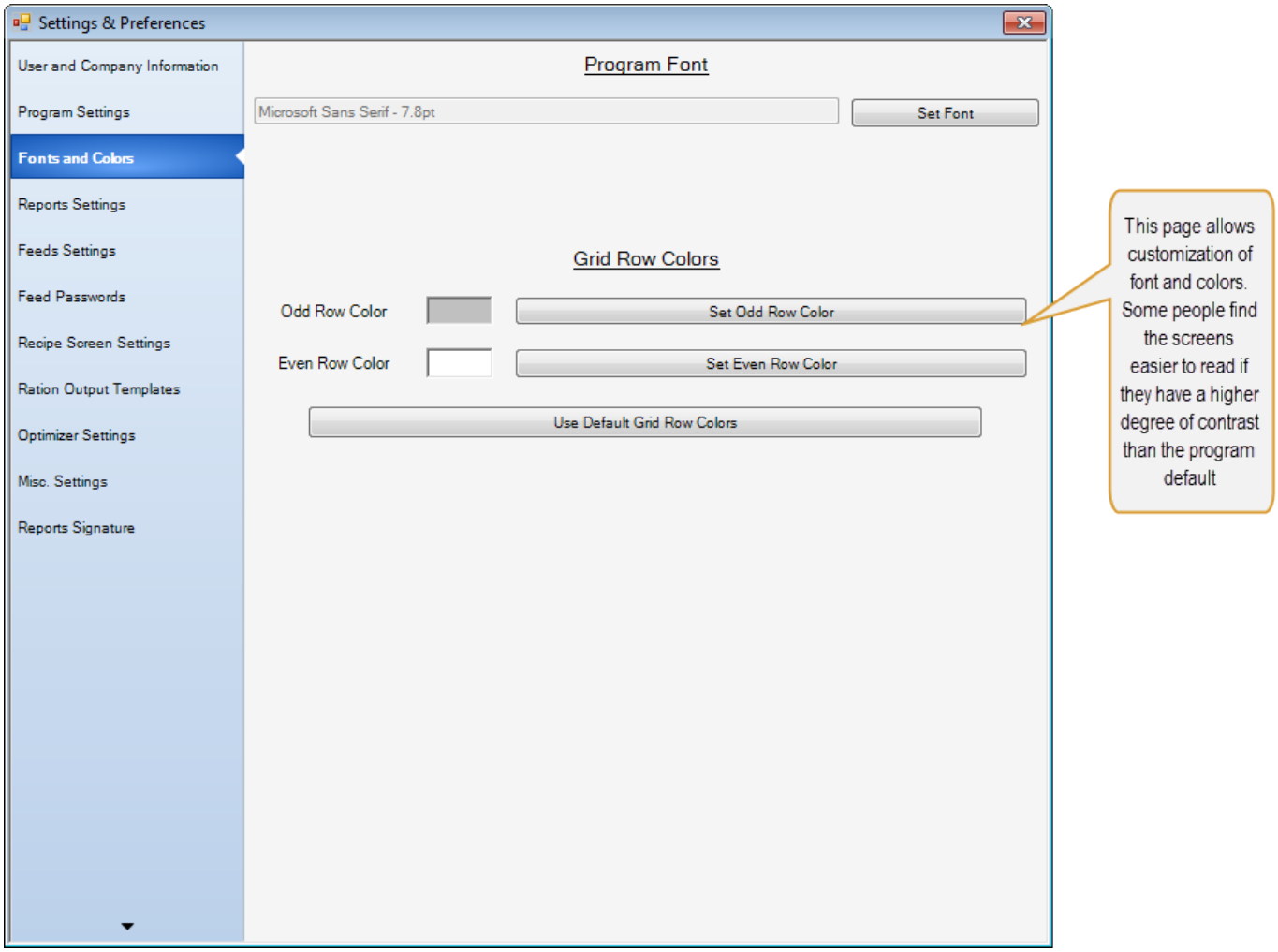
NOTE: If you previously used **.Pro version 2** and you change your User ID, any feeds you have changed in the past may not show up. Look at other feeds you have from **v 2** feeds to see your past ID; set your current ID to the same. Contact **AMTS** with further questions about this.

5.2 Program Settings



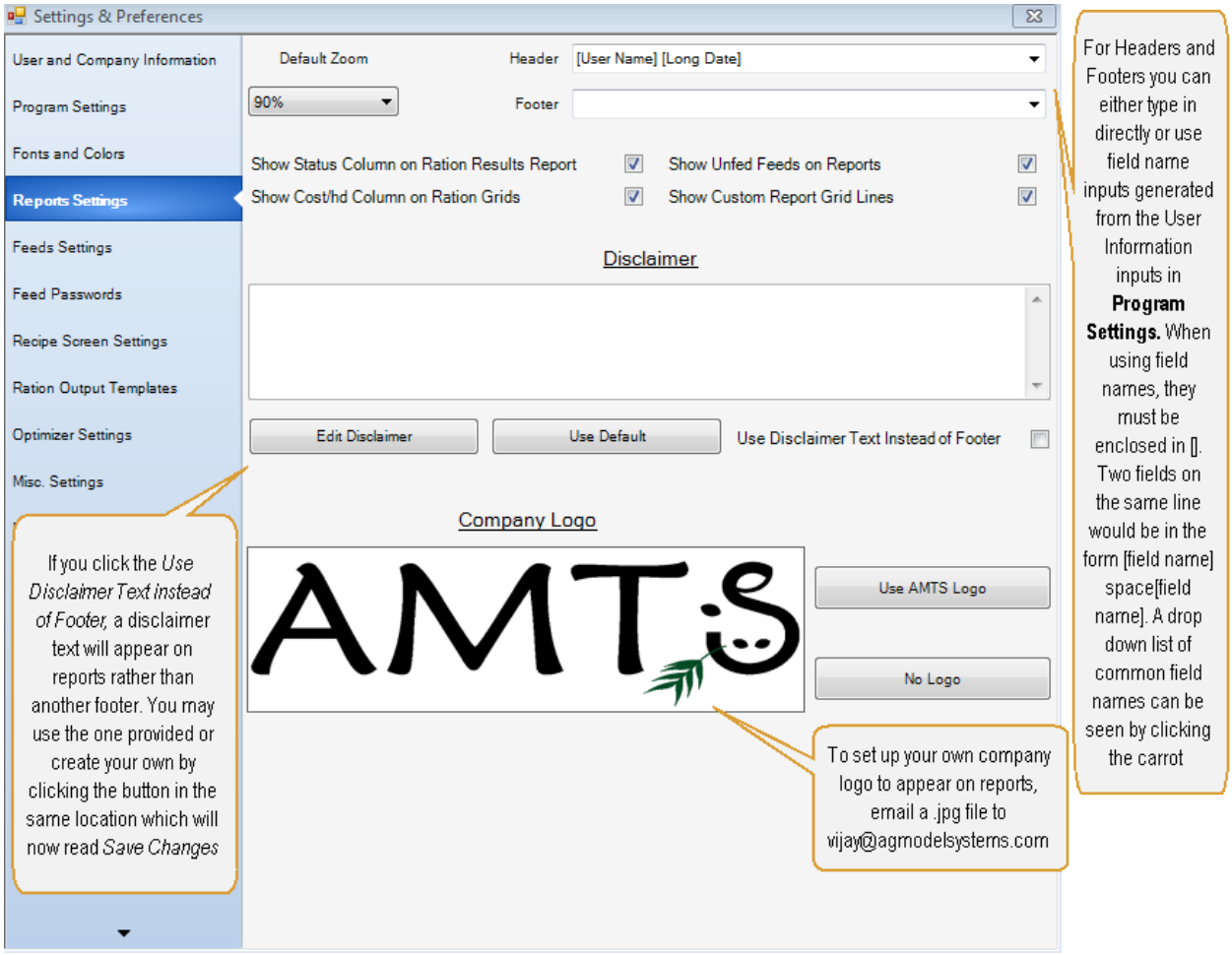
5.3 Fonts & Colors

Select the font type and colors for the program


Settings & Preferences
User and Company Information
Program Settings
Fonts and Colors
Reports Settings
Feeds Settings
Feed Passwords
Recipe Screen Settings
Ration Output Templates
Optimizer Settings
Misc. Settings
Reports Signature
Program Font
Microsoft Sans Serif - 7.8pt
Set Font
Grid Row Colors
Odd Row Color
Set Odd Row Color
Even Row Color
Set Even Row Color
Use Default Grid Row Colors
This page allows customization of font and colors. Some people find the screens easier to read if they have a higher degree of contrast than the program default

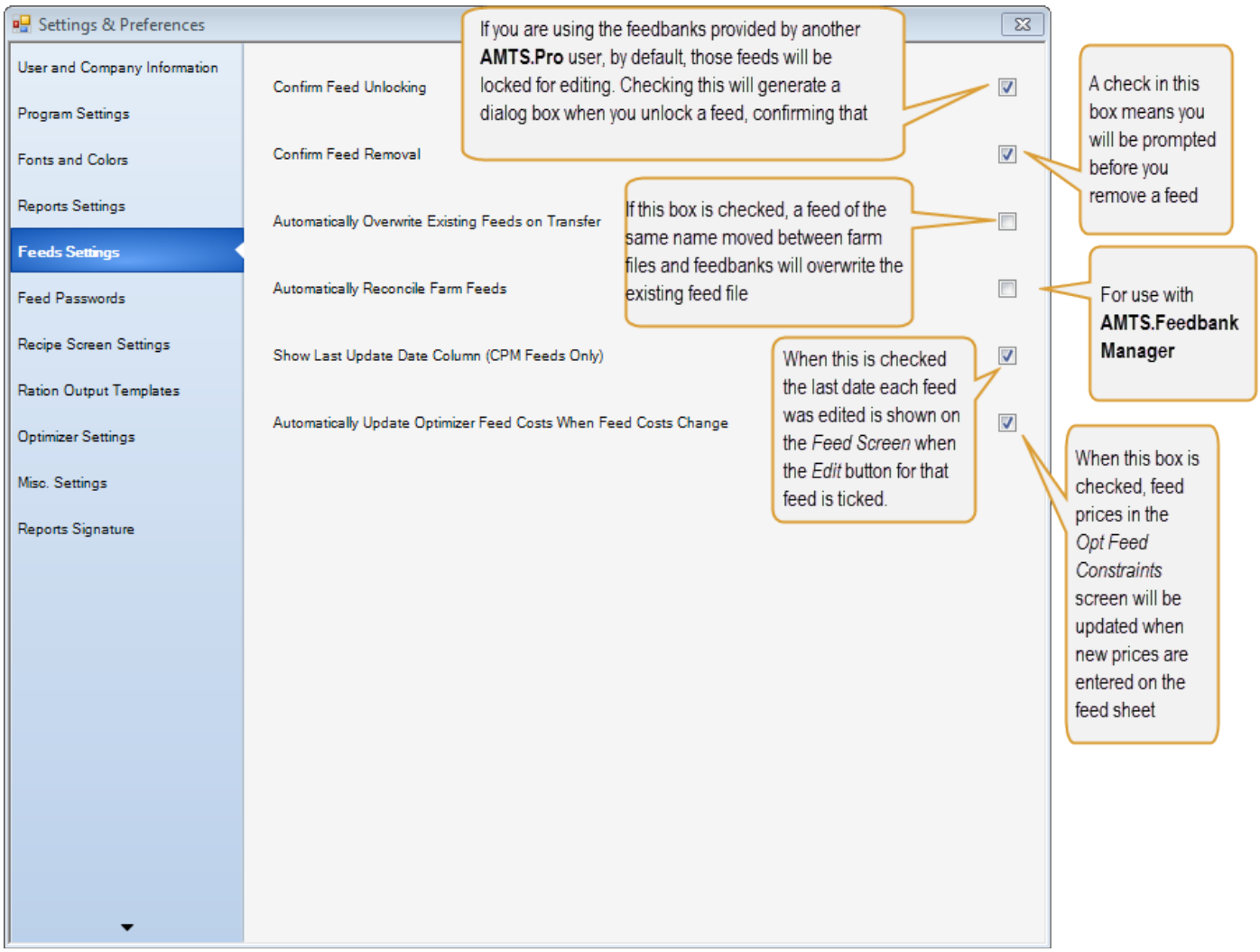
5.4 Report Settings

This screen allows you to control various ways your reports will appear.


Settings & Preferences
User and Company Information
Program Settings
Fonts and Colors
Reports Settings
Feeds Settings
Feed Passwords
Recipe Screen Settings
Ration Output Templates
Optimizer Settings
Misc. Settings
Default Zoom
90%
Header
[User Name] [Long Date]
Footer
Show Status Column on Ration Results Report
Show Cost/hd Column on Ration Grids
Show Unfed Feeds on Reports
Show Custom Report Grid Lines
Disclaimer
Edit Disclaimer
Use Default
Use Disclaimer Text Instead of Footer
Company Logo
Use AMTS Logo
No Logo
If you click the Use Disclaimer Text Instead of Footer, a disclaimer text will appear on reports rather than another footer. You may use the one provided or create your own by clicking the button in the same location which will now read Save Changes
To set up your own company logo to appear on reports, email a .jpg file to vijay@agmodelsystems.com
For Headers and Footers you can either type in directly or use field name inputs generated from the User Information inputs in Program Settings. When using field names, they must be enclosed in []. Two fields on the same line would be in the form [field name] space[field name]. A drop down list of common field names can be seen by clicking the carrot

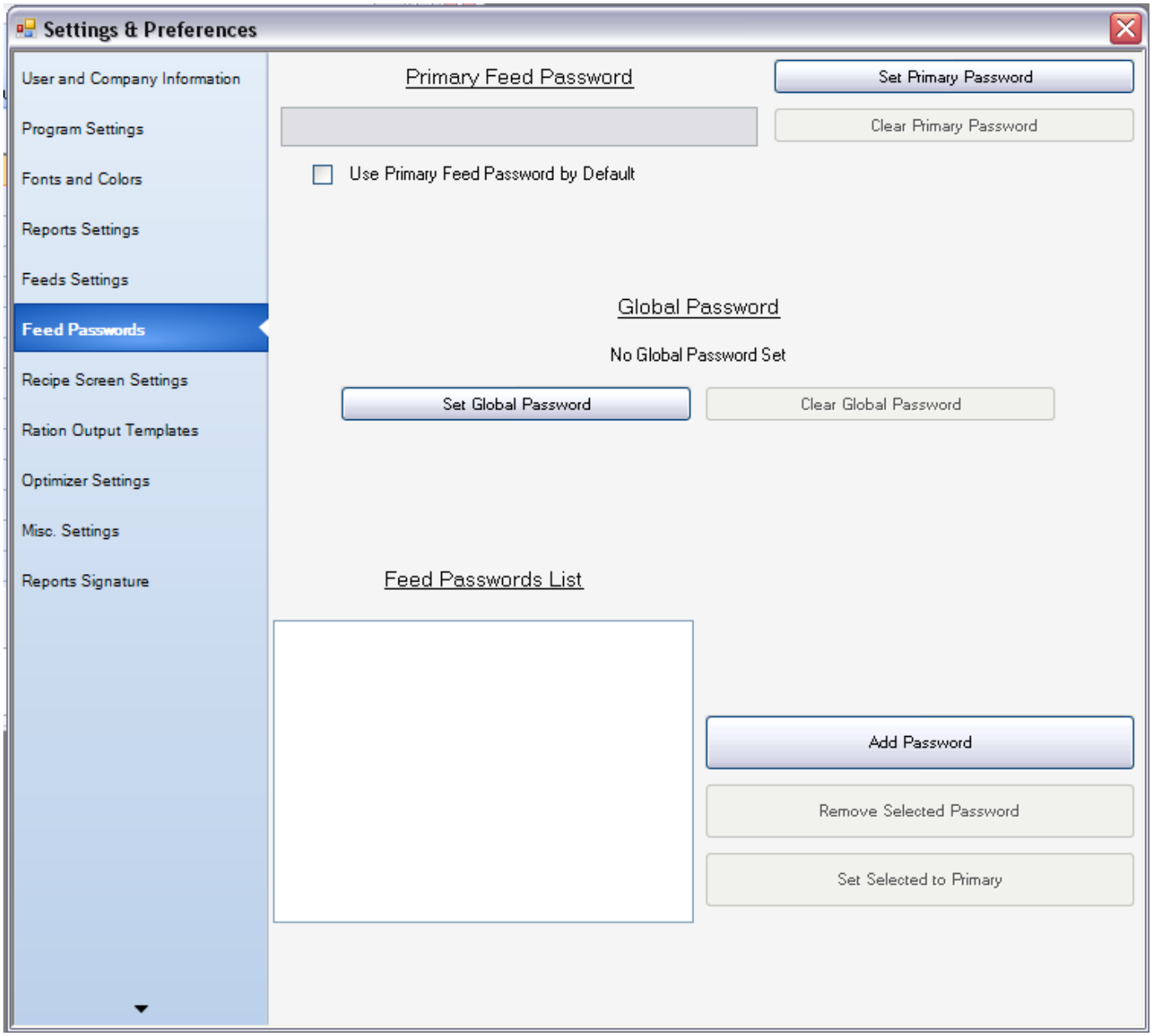
5.5 Feeds Settings

The actions you take in this window will affect how information is treated in the *Feed* section of the program. The settings chosen in this screen provide protection for some actions you may take later in the program. **There is no *undo* button**; for this reason, some of these boxes should be checked for a safety net. Until you are familiar with the program, it is a good idea to keep the default settings.

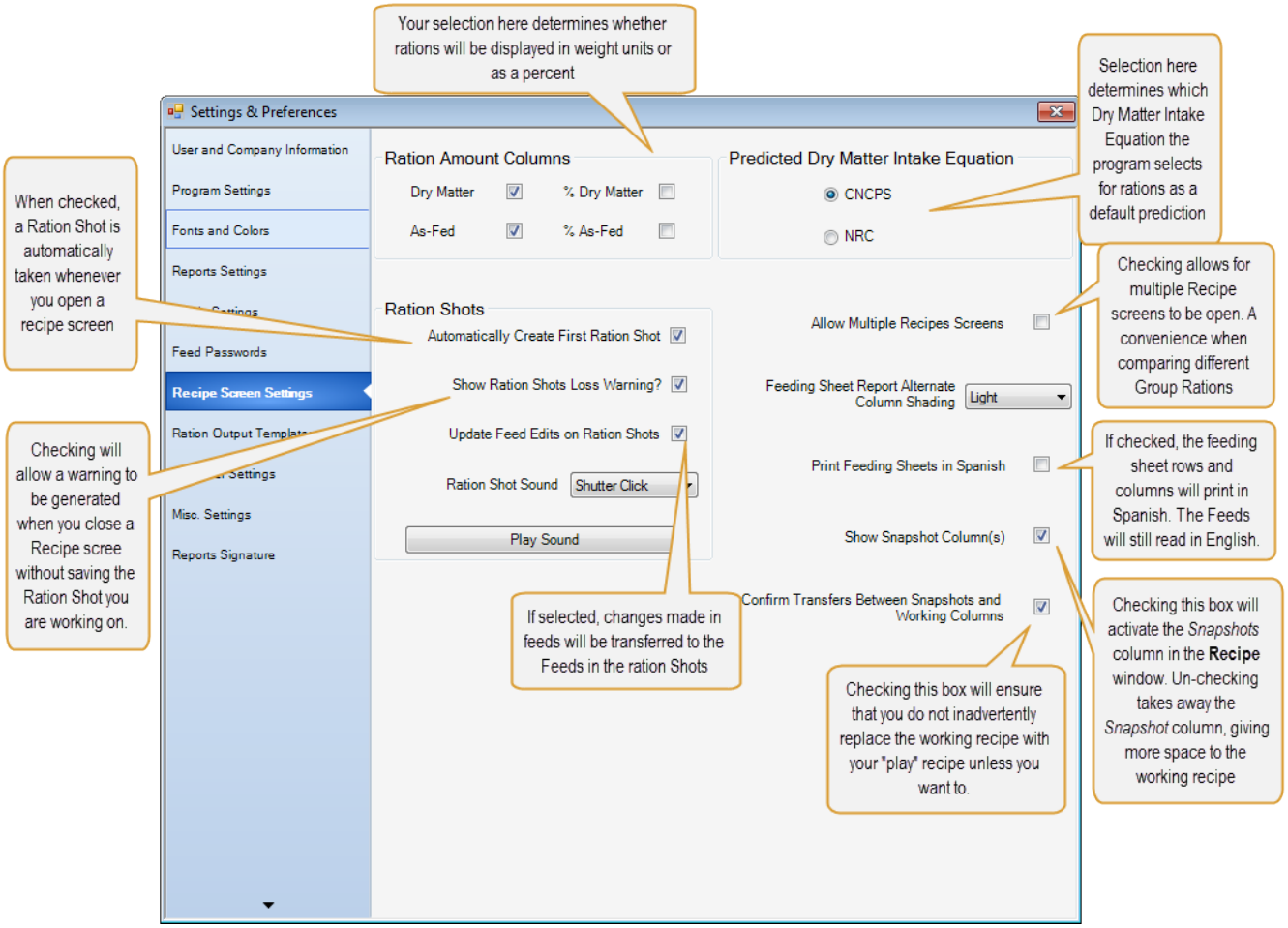

Settings & Preferences
User and Company Information
Program Settings
Fonts and Colors
Reports Settings
Feeds Settings
Feed Passwords
Recipe Screen Settings
Ration Output Templates
Optimizer Settings
Misc. Settings
Reports Signature
Confirm Feed Unlocking
Confirm Feed Removal
Automatically Overwrite Existing Feeds on Transfer
Automatically Reconcile Farm Feeds
Show Last Update Date Column (CPM Feeds Only)
Automatically Update Optimizer Feed Costs When Feed Costs Change
If you are using the feedbanks provided by another AMTS.Pro user, by default, those feeds will be locked for editing. Checking this will generate a dialog box when you unlock a feed, confirming that
A check in this box means you will be prompted before you remove a feed
If this box is checked, a feed of the same name moved between farm files and feedbanks will overwrite the existing feed file
For use with AMTS.Feedbank Manager
When this is checked the last date each feed was edited is shown on the Feed Screen when the Edit button for that feed is ticked.
When this box is checked, feed prices in the Opt Feed Constraints screen will be updated when new prices are entered on the feed sheet

5.6 Feed Passwords

Feed Passwords are used as an added level of protection for a user. Password protected feeds can still be used by any user you send them to; however, all they will be able to see is: DM, NDF, CP, Fat, and Ash. Passwords can also be used to protect composites.



5.7 Recipe Screen Settings


Your selection here determines whether rations will be displayed in weight units or as a percent
Selection here determines which Dry Matter Intake Equation the program selects for rations as a default prediction
When checked, a Ration Shot is automatically taken whenever you open a recipe screen
Checking allows for multiple Recipe screens to be open. A convenience when comparing different Group Rations
Checking will allow a warning to be generated when you close a Recipe scree without saving the Ration Shot you are working on.
If checked, the feeding sheet rows and columns will print in Spanish. The Feeds will still read in English.
If selected, changes made in feeds will be transferred to the Feeds in the ration Shots
Checking this box will activate the Snapshots column in the Recipe window. Un-checking takes away the Snapshot column, giving more space to the working recipe
Checking this box will ensure that you do not inadvertently replace the working recipe with your "play" recipe unless you want to.
Settings & Preferences
User and Company Information
Program Settings
Fonts and Colors
Reports Settings
Feed Passwords
Recipe Screen Settings
Misc. Settings
Reports Signature
Ration Amount Columns
Dry Matter
% Dry Matter
As-Fed
% As-Fed
Predicted Dry Matter Intake Equation
CNCPS
NRC
Ration Shots
Automatically Create First Ration Shot
Show Ration Shots Loss Warning?
Update Feed Edits on Ration Shots
Ration Shot Sound
Shutter Click
Play Sound
Allow Multiple Recipes Screens
Feeding Sheet Report Alternate Column Shading
Light
Print Feeding Sheets in Spanish
Show Snapshot Column(s)
Confirm Transfers Between Snapshots and Working Columns

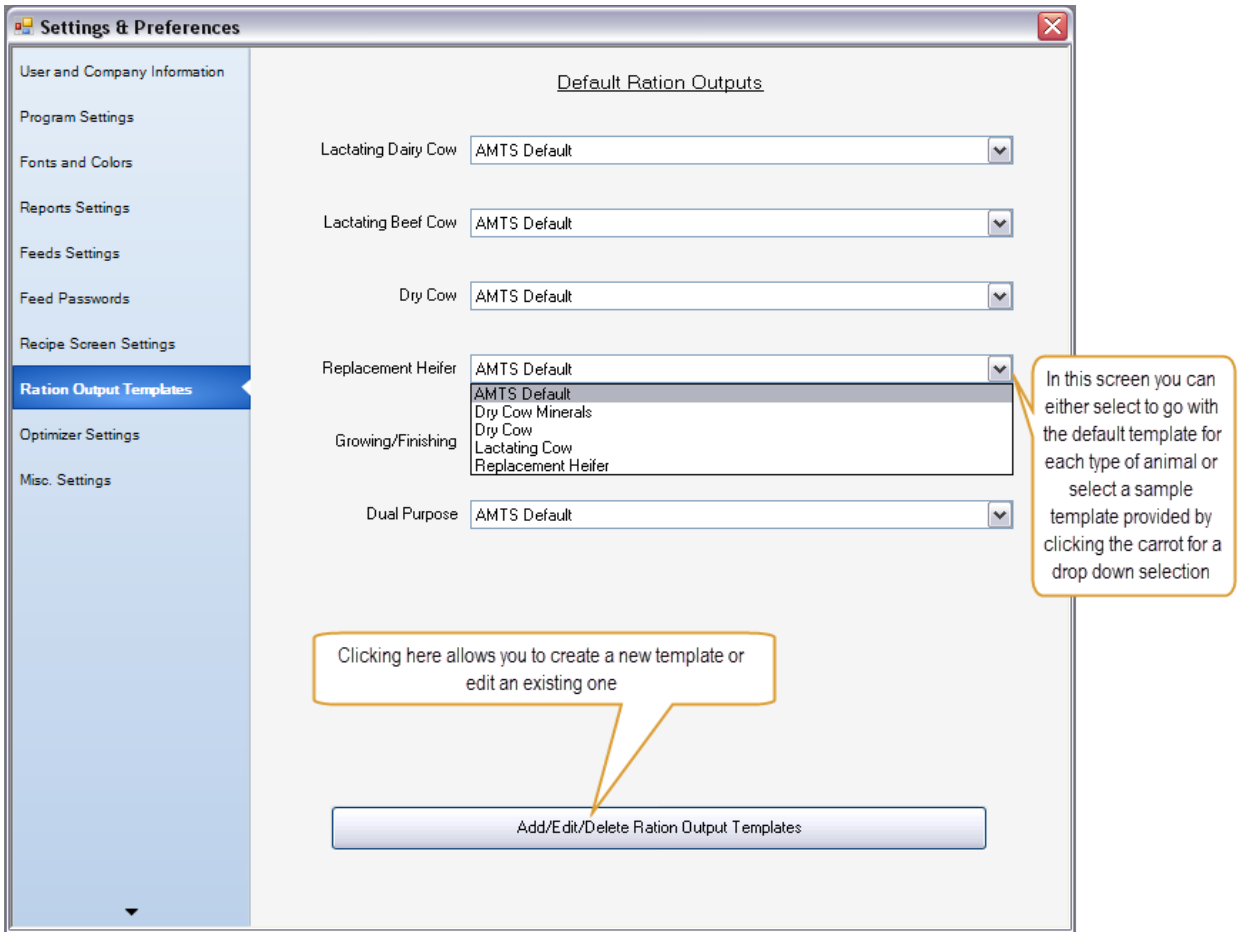
Choosing the *Predicted Dry Matter Intake Equation* will set the default equation for animal intake based on either the equation from CNCPS or the equation from NRC.

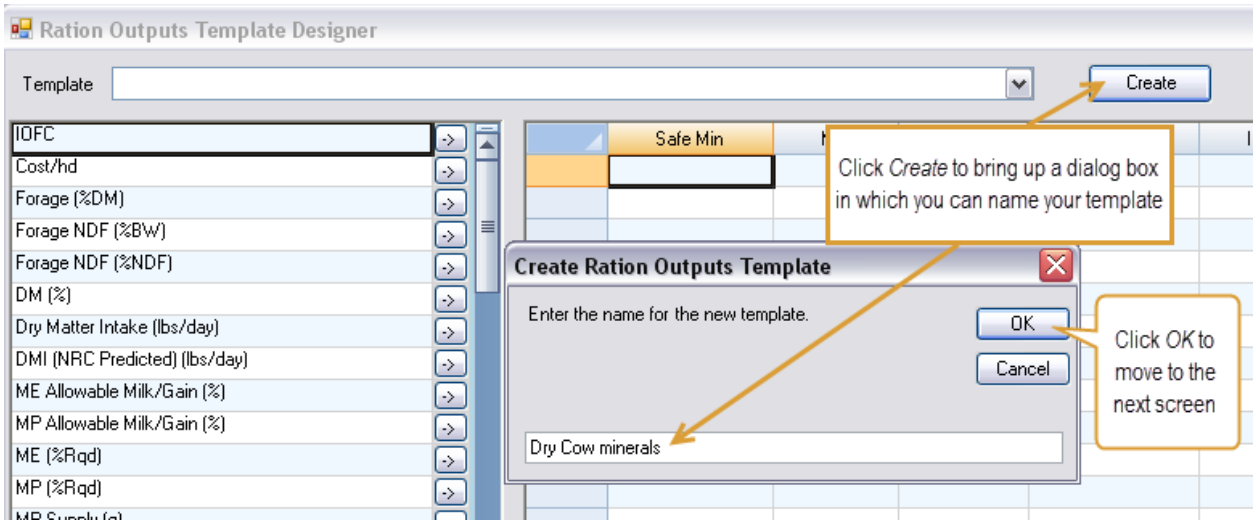
The **Snapshot** column is a new feature that allows you to make changes to the ration and see how that will affect the outputs in a side-by-side comparison with the unchanged, original ration. With a click, the changes can be incorporated into the recipe. This feature will be explained in more detail in the **Recipe** section of the manual.

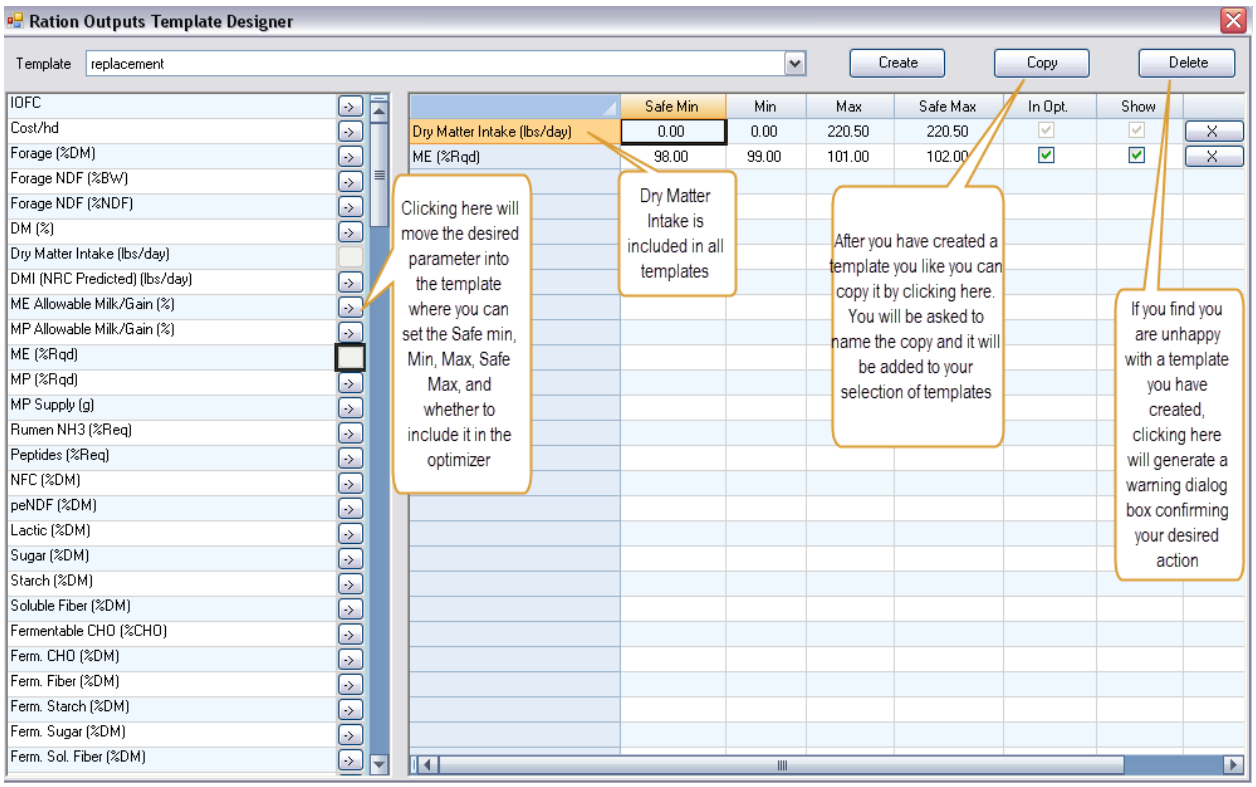
5.8 Ration Outputs Templates

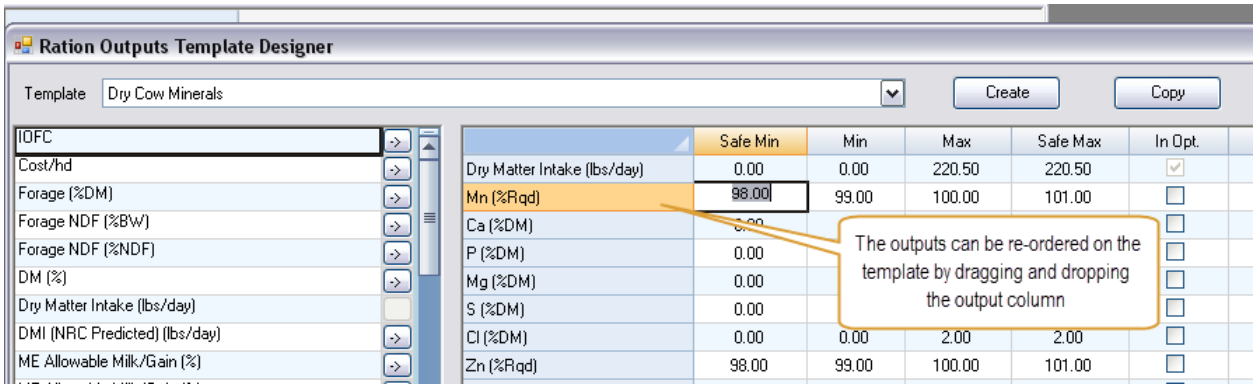
This screen allows you to customize ration outputs that are shown and customize optimizer settings; you can create as many output lists as you would like. Using the custom templates allows you to tailor the recipe reports to suit your needs. The templates are a way to tailor reports for your clients. It is a way to create an uncluttered list of the outputs that you most emphasize when working with farms. You can create templates specifically for different farm types. We have sup-

plied four templates; *Dry Cow Minerals, Dry Cow, Lactating Cow,* and *Replacement Heifer* as a starting point.

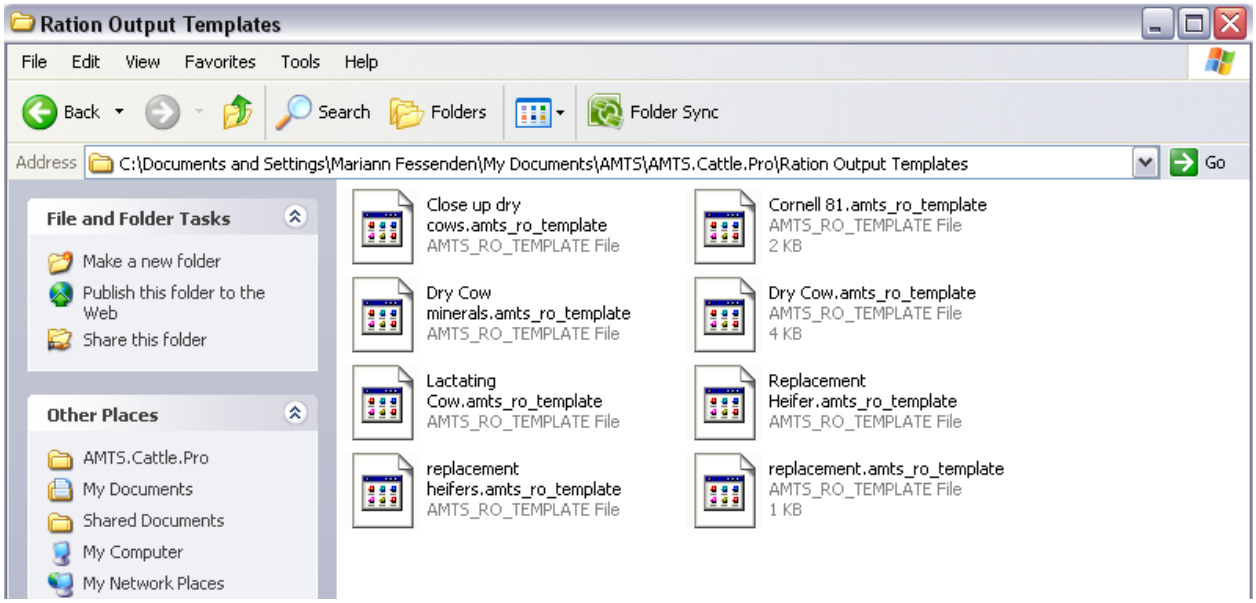




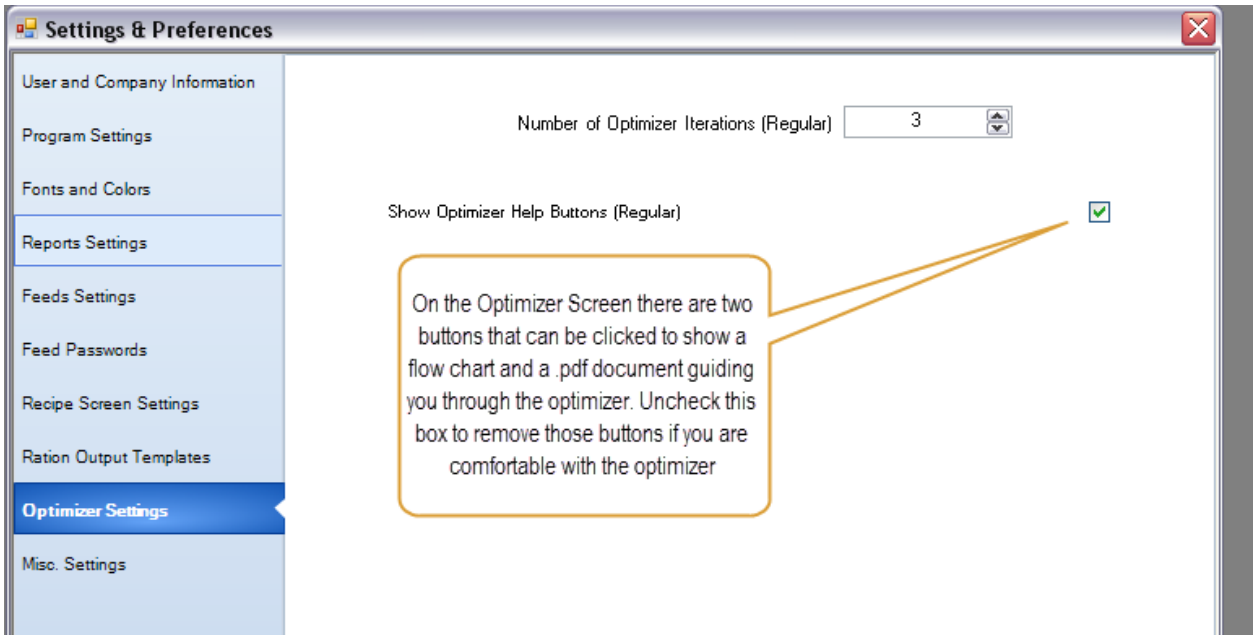




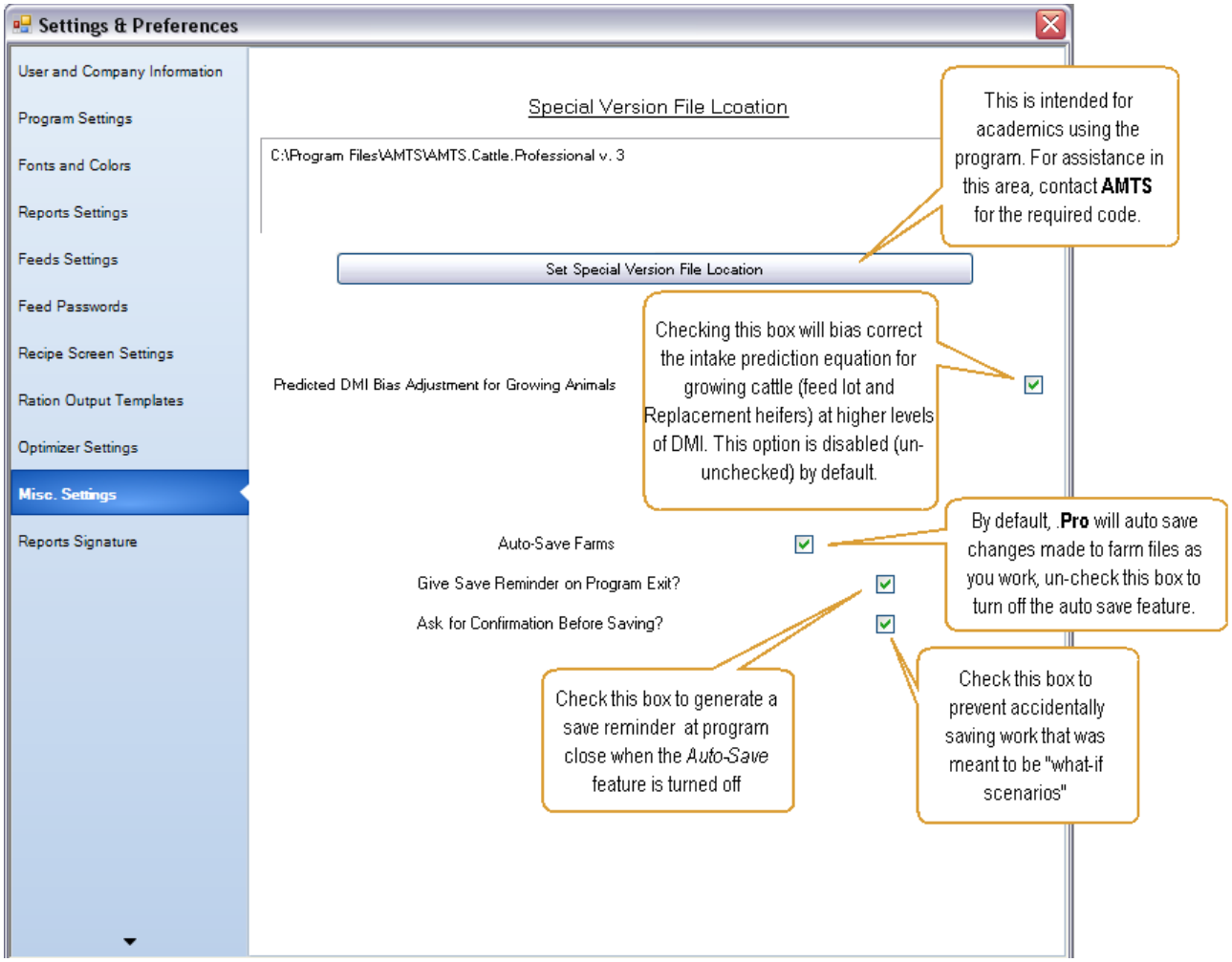
Each template can be saved as a file that can be shared with others. You can find the saved templates by going to **My Documents>AMTS>AMTS.Cattle.Pro>Ration Output Templates**



5.9 Optimizer Settings


Settings & Preferences
User and Company Information
Program Settings
Fonts and Colors
Reports Settings
Feeds Settings
Feed Passwords
Recipe Screen Settings
Ration Output Templates
Optimizer Settings
Misc. Settings
Number of Optimizer Iterations (Regular)
3
Show Optimizer Help Buttons (Regular)
On the Optimizer Screen there are two buttons that can be clicked to show a flow chart and a .pdf document guiding you through the optimizer. Uncheck this box to remove those buttons if you are comfortable with the optimizer

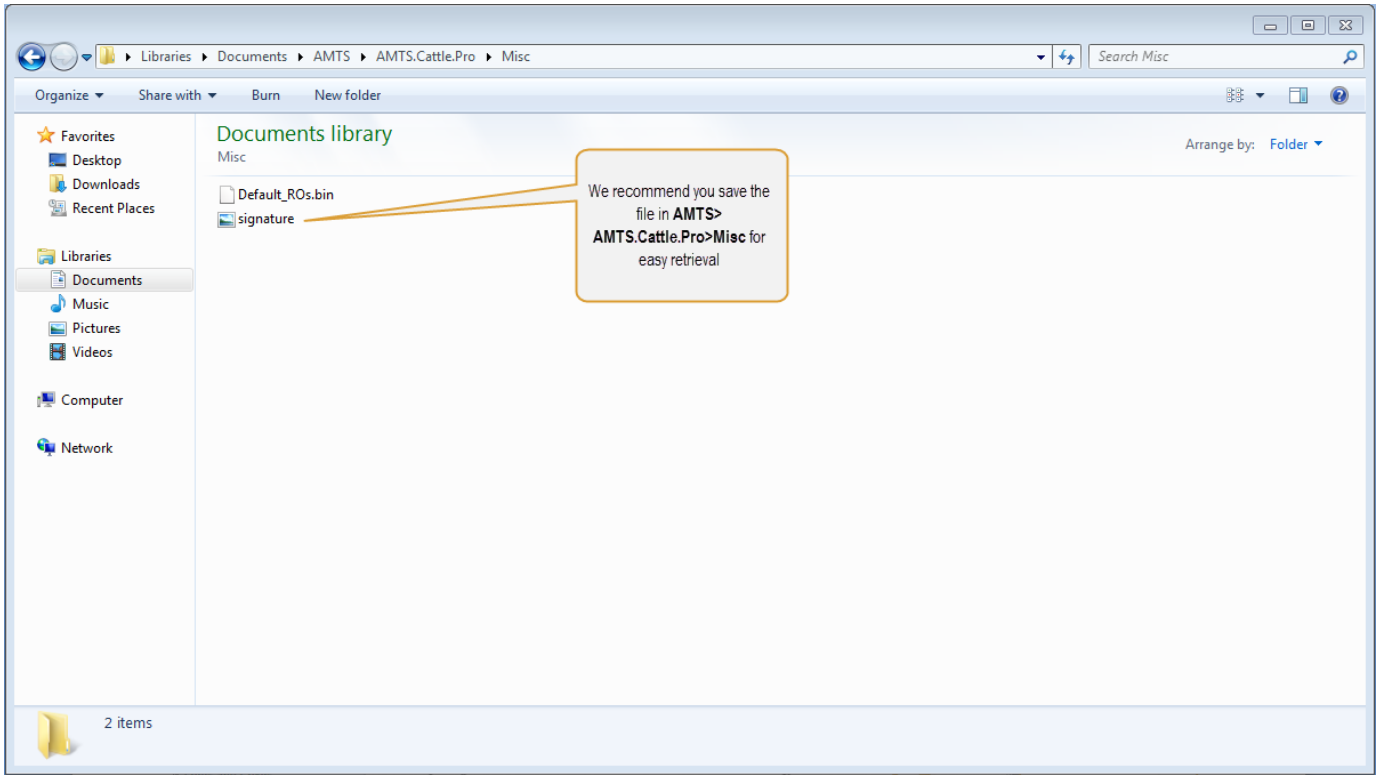
5.10 Misc. Settings


Settings & Preferences
User and Company Information
Program Settings
Fonts and Colors
Reports Settings
Feeds Settings
Feed Passwords
Recipe Screen Settings
Ration Output Templates
Optimizer Settings
Misc. Settings
Reports Signature
Special Version File Location
C:\Program Files\AMTS\AMTS.Cattle.Professional v. 3
Set Special Version File Location
This is intended for academics using the program. For assistance in this area, contact AMTS for the required code.
Predicted DMI Bias Adjustment for Growing Animals
Checking this box will bias correct the intake prediction equation for growing cattle (feed lot and Replacement heifers) at higher levels of DMI. This option is disabled (un-unchecked) by default.
Auto-Save Farms
By default, .Pro will auto save changes made to farm files as you work, un-check this box to turn off the auto save feature.
Give Save Reminder on Program Exit?
Ask for Confirmation Before Saving?
Check this box to generate a save reminder at program close when the Auto-Save feature is turned off
Check this box to prevent accidentally saving work that was meant to be "what-if scenarios"

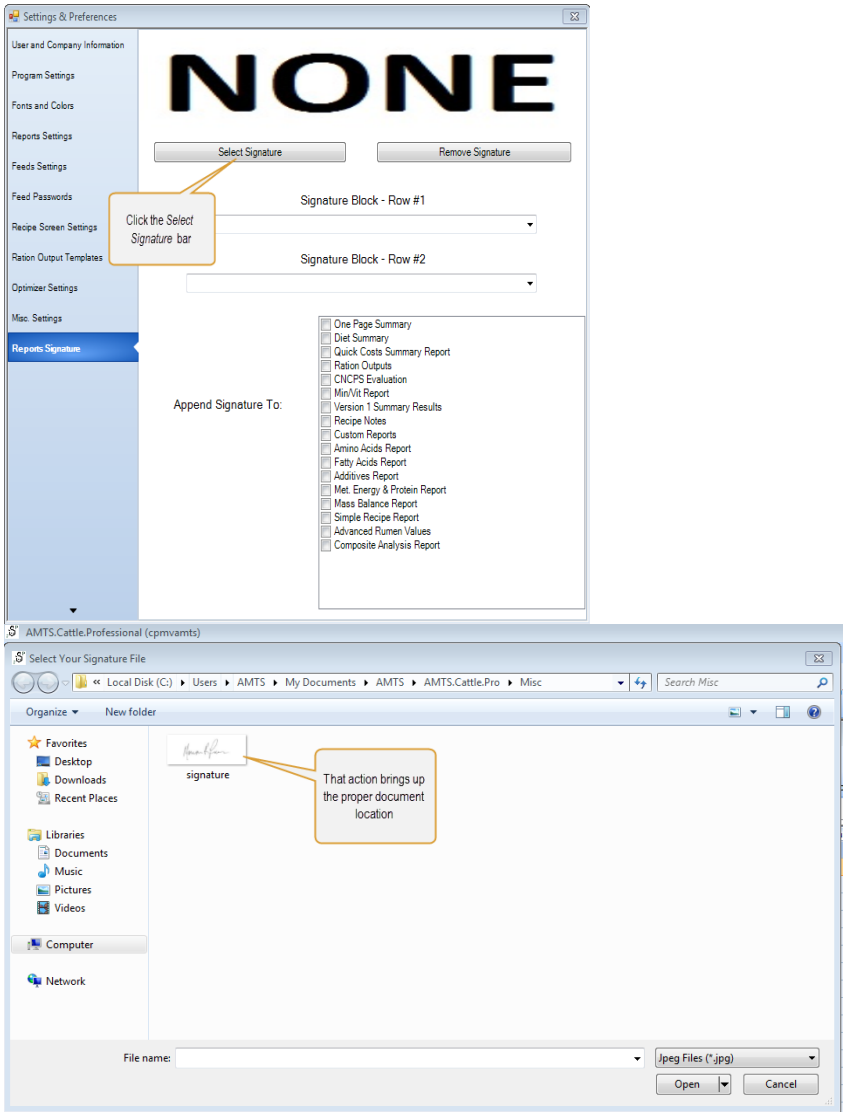
Turning off the Auto-Save feature give you the oportunity to open up back-up versions of the farm and play around with them without messing up the current farm. At anytime, changes can be saved by selecting *save* in the “Files” menu or hitting <Ctrl-S>. After you have finished working in the back-up farm, you can choose to close it without saving the changes. When you next open a farm by selecting *Open Farm* it will it will be the last folder you opened a farm from. If you find you are not in your *Current Farms* folder click up a level to find that folder.

5.11 Reports Signature

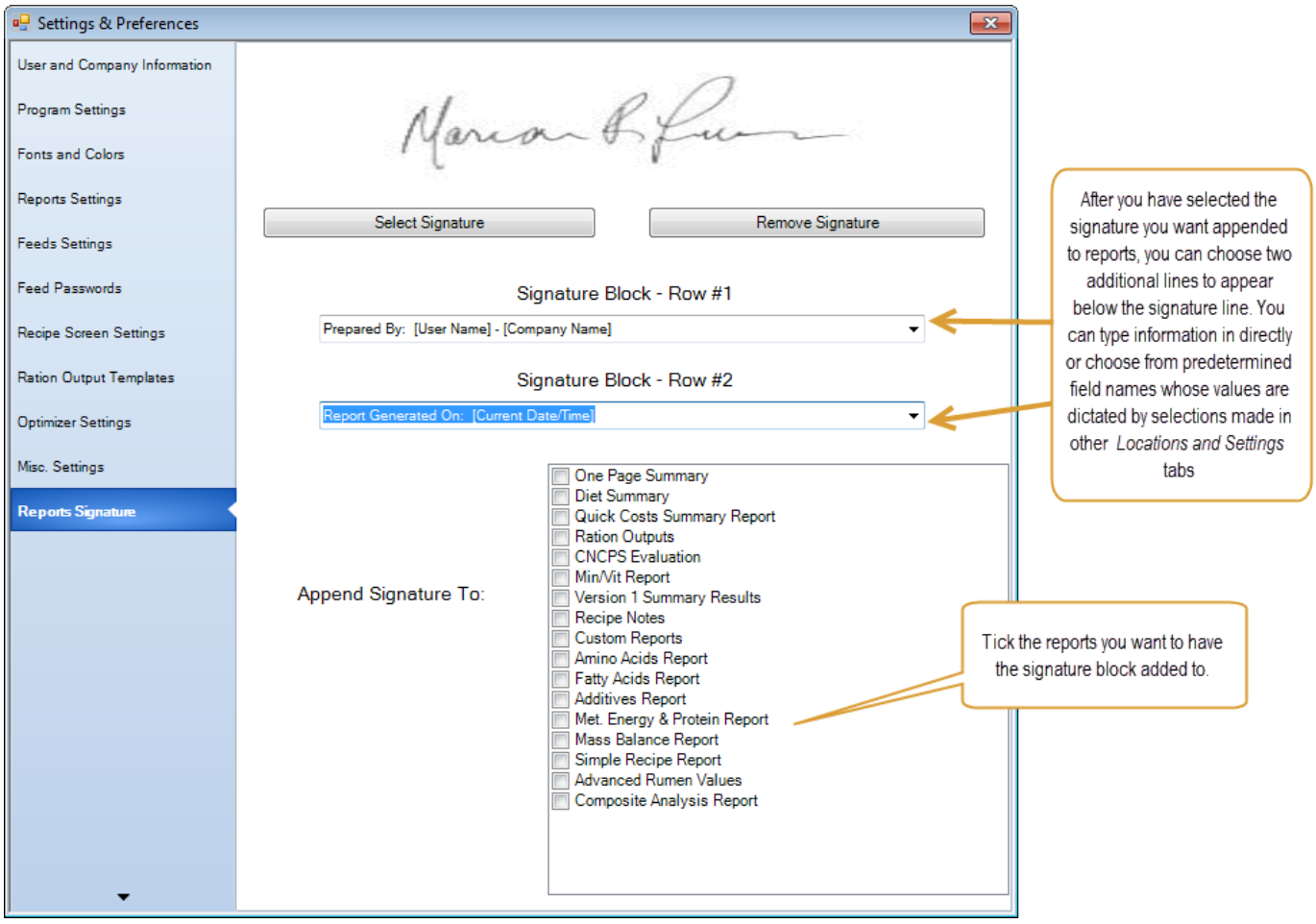
This setting allows you to add a signature to further customize the reports you print for your clients. To set this feature up, first you must have a .jpg image file of your signature. This is easily accomplished by signing a blank sheet of paper, either scanning or photographing the signature, and saving the image as a .jpg file on you computer.



After you have saved the .jpg file bring up the *Settings* dialog box that allows you to add a signature

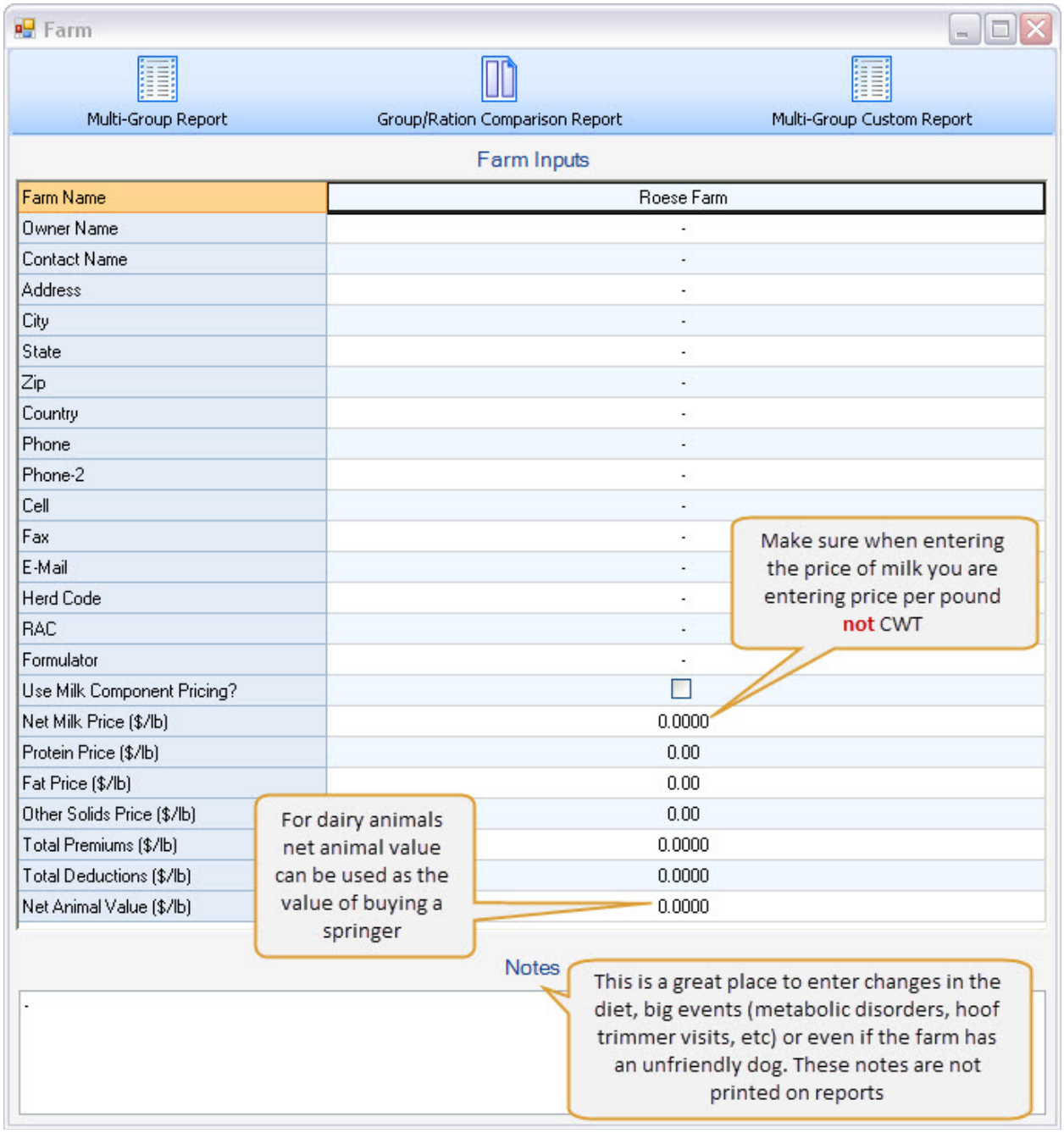


In this example I have saved a scanned signature in my AMTS > AMTS.Cattle.Pro > Misc folder.


Settings & Preferences
User and Company Information
Program Settings
Fonts and Colors
Reports Settings
Feeds Settings
Feed Passwords
Recipe Screen Settings
Ration Output Templates
Optimizer Settings
Misc. Settings
Reports Signature
Select Signature
Remove Signature
Signature Block - Row #1
Prepared By: [User Name] - [Company Name]
Signature Block - Row #2
Report Generated On: [Current Date/Time]
Append Signature To:
One Page Summary
Diet Summary
Quick Costs Summary Report
Ration Outputs
CNCPS Evaluation
Min/Vit Report
Version 1 Summary Results
Recipe Notes
Custom Reports
Amino Acids Report
Fatty Acids Report
Additives Report
Met. Energy & Protein Report
Mass Balance Report
Simple Recipe Report
Advanced Rumen Values
Composite Analysis Report
After you have selected the signature you want appended to reports, you can choose two additional lines to appear below the signature line. You can type information in directly or choose from predetermined field names whose values are dictated by selections made in other Locations and Settings tabs
Tick the reports you want to have the signature block added to.

6.0 Farm

This is another tab that can be used to bring up the Farm Information input screen; it is the same screen and asks for the same information as the screen generated when a new farm is created within .**Cattle™.Pro.** That screen will look thus:

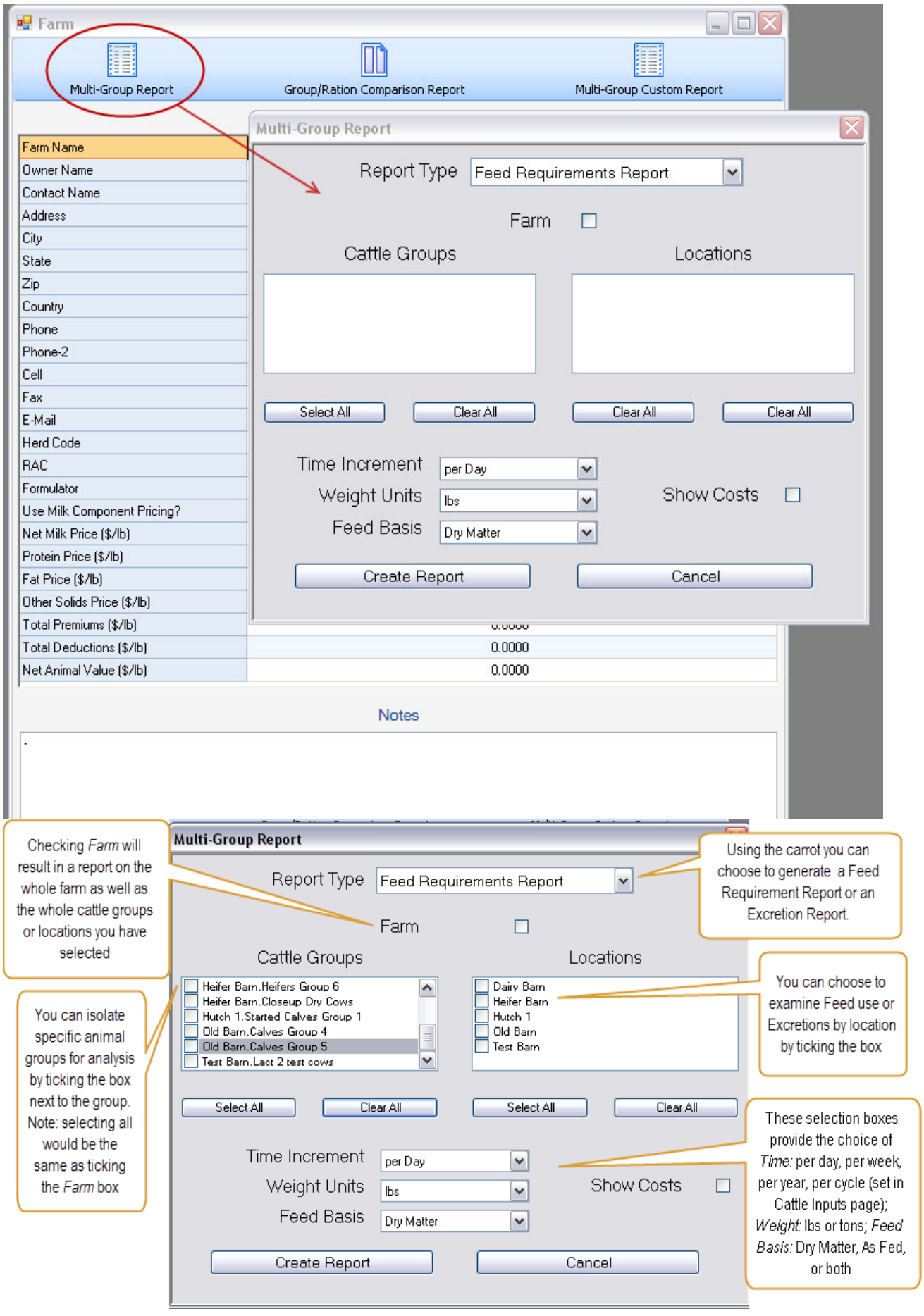


Reports of Interest within the Farm Window

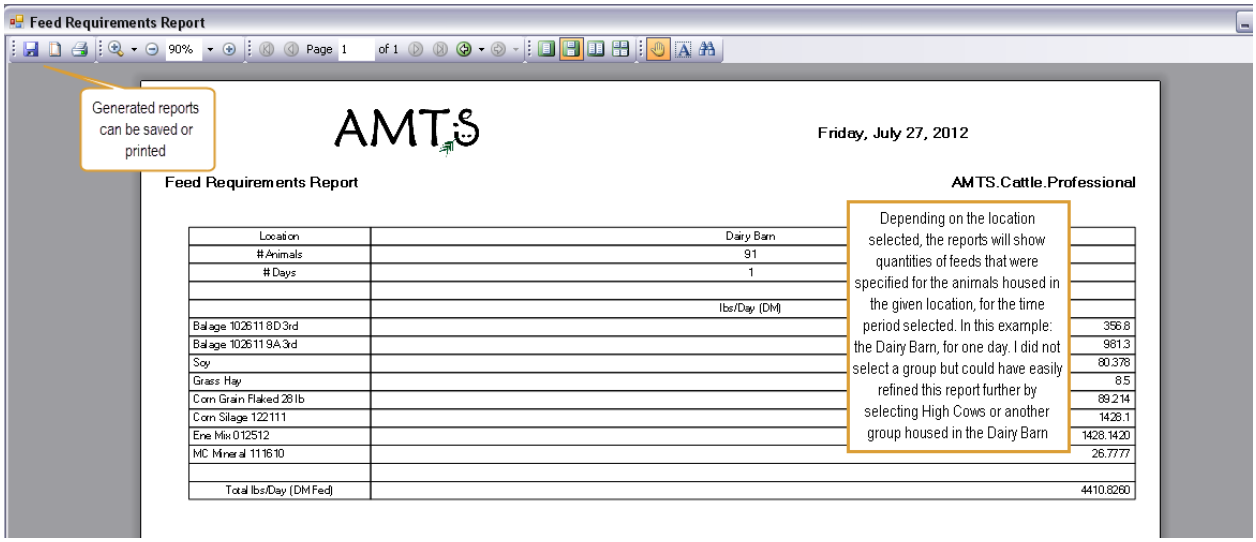
The Farm window includes three tabs that, when clicked, provide some useful yet often overlooked forms. Although we are covering them in manual at this point, they will be of no value until rations have been created on the farm.

6.1 Multi-Group Report

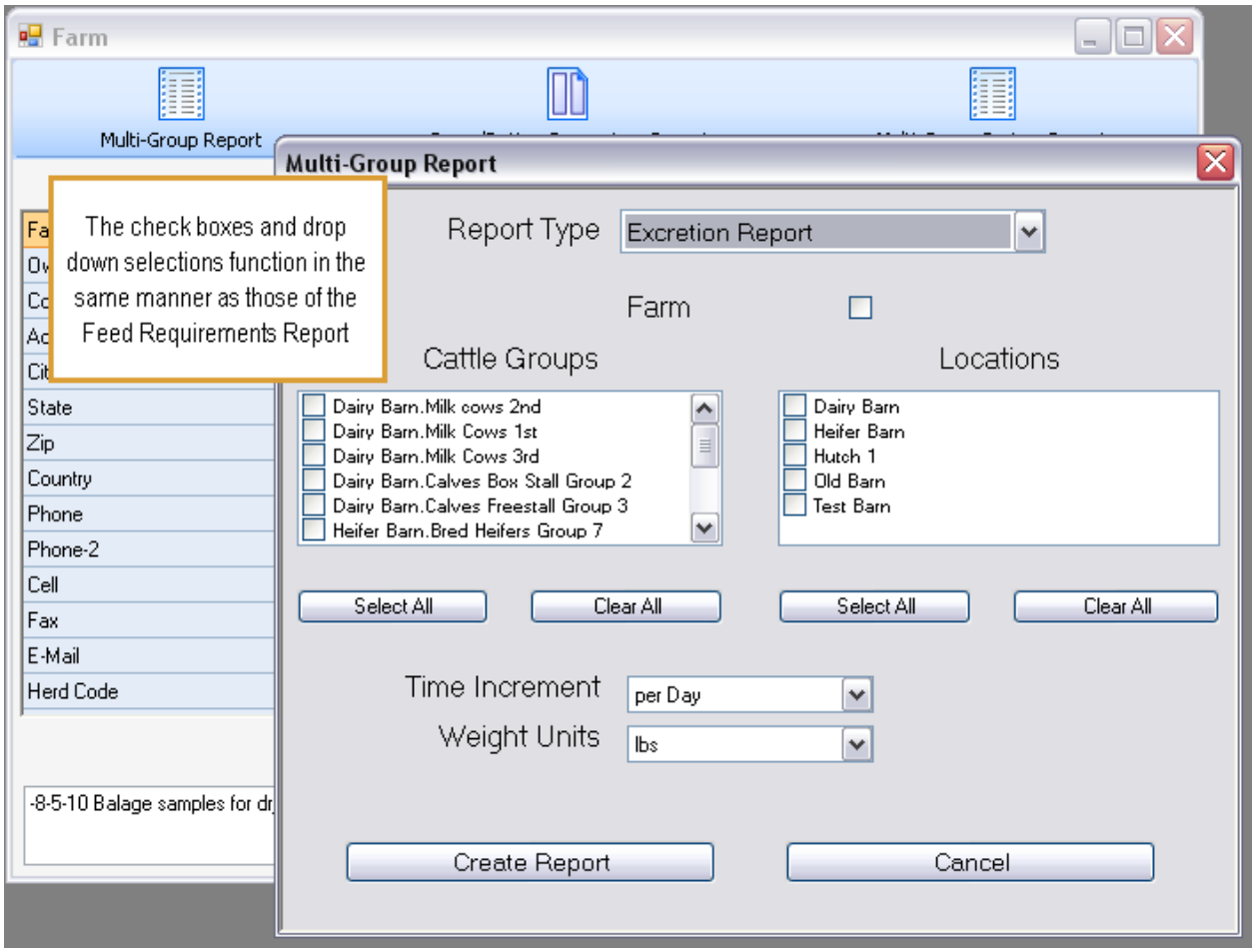
The Multi-Group Report aggregates feed use or predicted excretion for multiple groups, locations, and/or the whole farm. This can be very useful for planning for changes in inventory when rations are changed and in considering “what-if” strategies. This very powerful report is able to give you a quick summary of the numbers you need for planning short and long term feed inventory needs and provides the ability to assess excrement outputs for nutrient balancing planning.

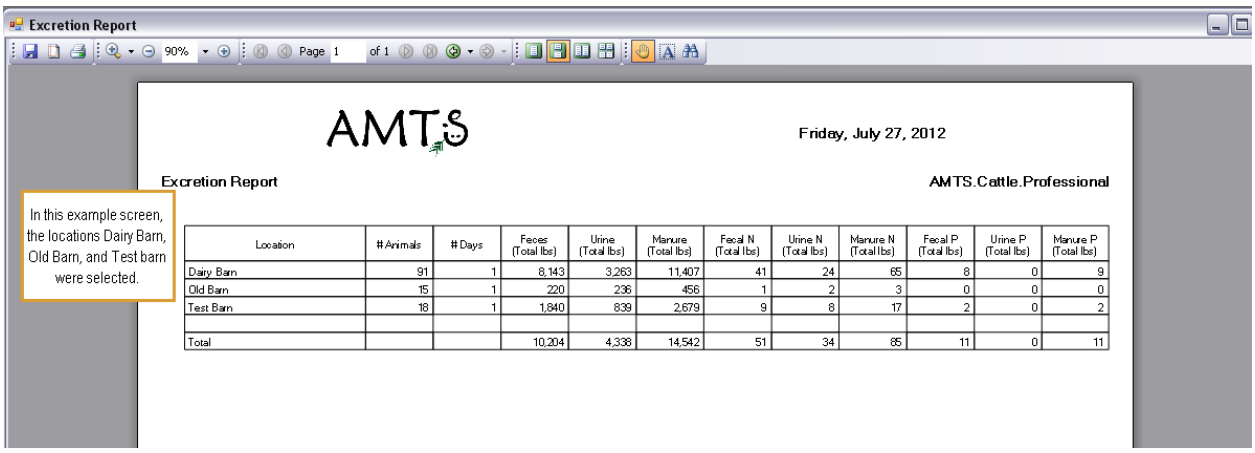

Farm
Multi-Group Report
Group/Ration Comparison Report
Multi-Group Custom Report
Farm Name
Owner Name
Contact Name
Address
City
State
Zip
Country
Phone
Phone-2
Cell
Fax
E-Mail
Herd Code
RAC
Formulator
Use Milk Component Pricing?
Net Milk Price ($/lb)
Protein Price ($/lb)
Fat Price ($/lb)
Other Solids Price ($/lb)
Total Premiums ($/lb)
Total Deductions ($/lb) 0.0000
Net Animal Value ($/lb) 0.0000
Notes
Multi-Group Report
Report Type
Feed Requirements Report
Farm
Cattle Groups
Locations
Select All
Clear All
Clear All
Clear All
Time Increment
per Day
Weight Units
lbs
Feed Basis
Dry Matter
Show Costs
Create Report
Cancel
Checking Farm will result in a report on the whole farm as well as the whole cattle groups or locations you have selected
Using the carrot you can choose to generate a Feed Requirement Report or an Excretion Report.
You can isolate specific animal groups for analysis by ticking the box next to the group. Note: selecting all would be the same as ticking the Farm box
Heifer Barn.Heifers Group 6
Heifer Barn.Closeup Dry Cows
Hutch 1.Started Calves Group 1
Old Barn.Calves Group 4
Old Barn.Calves Group 5
Test Barn.Lact 2 test cows
Dairy Barn
Heifer Barn
Hutch 1
Old Barn
Test Barn
You can choose to examine Feed use or Excretions by location by ticking the box
These selection boxes provide the choice of Time: per day, per week, per year, per cycle (set in Cattle Inputs page); Weight: lbs or tons; Feed Basis: Dry Matter, As Fed, or both

A Feed Requirements Report looks thus:


Feed Requirements Report
Generated reports can be saved or printed
AMTS
Friday, July 27, 2012
Feed Requirements Report
AMTS.Cattle.Professional
Depending on the location selected, the reports will show quantities of feeds that were specified for the animals housed in the given location, for the time period selected. In this example: the Dairy Barn, for one day. I did not select a group but could have easily refined this report further by selecting High Cows or another group housed in the Dairy Barn
Location | Dairy Barn
Animals | 91
Days | 1
lbs/Day (DM)
Balage 102611 8D 3rd | 356.8
Balage 102611 9A 3rd | 981.3
Soy | 80.378
Grass Hay | 8.5
Corn Grain Flaked 28 lb | 89.214
Corn Silage 122111 | 1428.1
Ene Mix 012512 | 1428.1420
MC Mineral 111610 | 26.7777
Total lbs/Day (DM Fed) | 4410.8260

Using that same Multi- Group Report tab you can also generate an Excretion Report by whole farm, individual location, individual groups, and variations thereof.



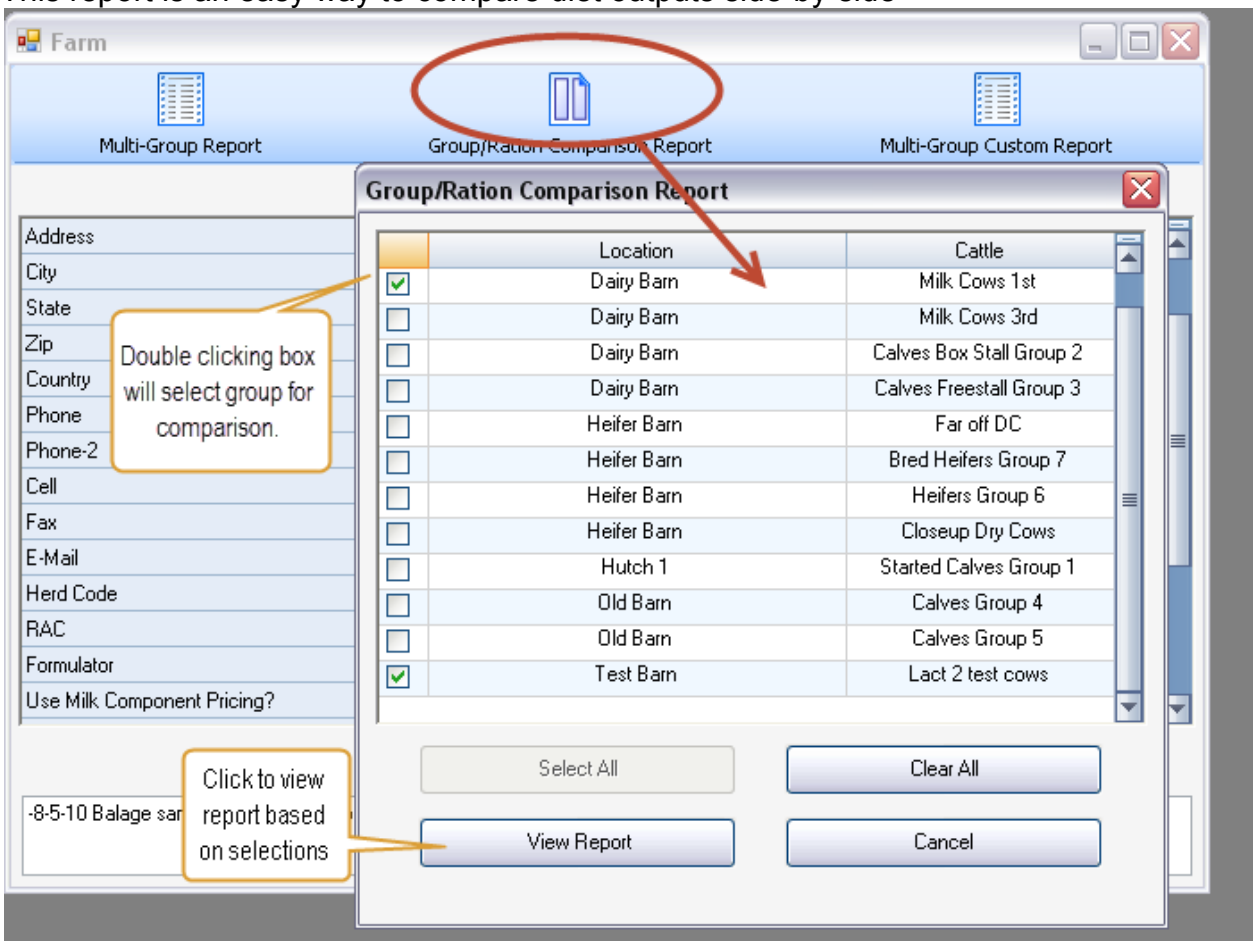


Location	# Animals	# Days	Feces (Total lbs)	Urine (Total lbs)	Manure (Total lbs)	Fecal N (Total lbs)	Urine N (Total lbs)	Manure N (Total lbs)	Fecal P (Total lbs)	Urine P (Total lbs)	Manure P (Total lbs)
Dairy Barn	91	1	8,143	3,263	11,407	41	24	65	8	0	9
Old Barn	15	1	220	236	456	1	2	3	0	0	0
Test Barn	18	1	1,840	839	2,679	9	8	17	2	0	2
Total			10,204	4,338	14,542	51	34	85	11	0	11

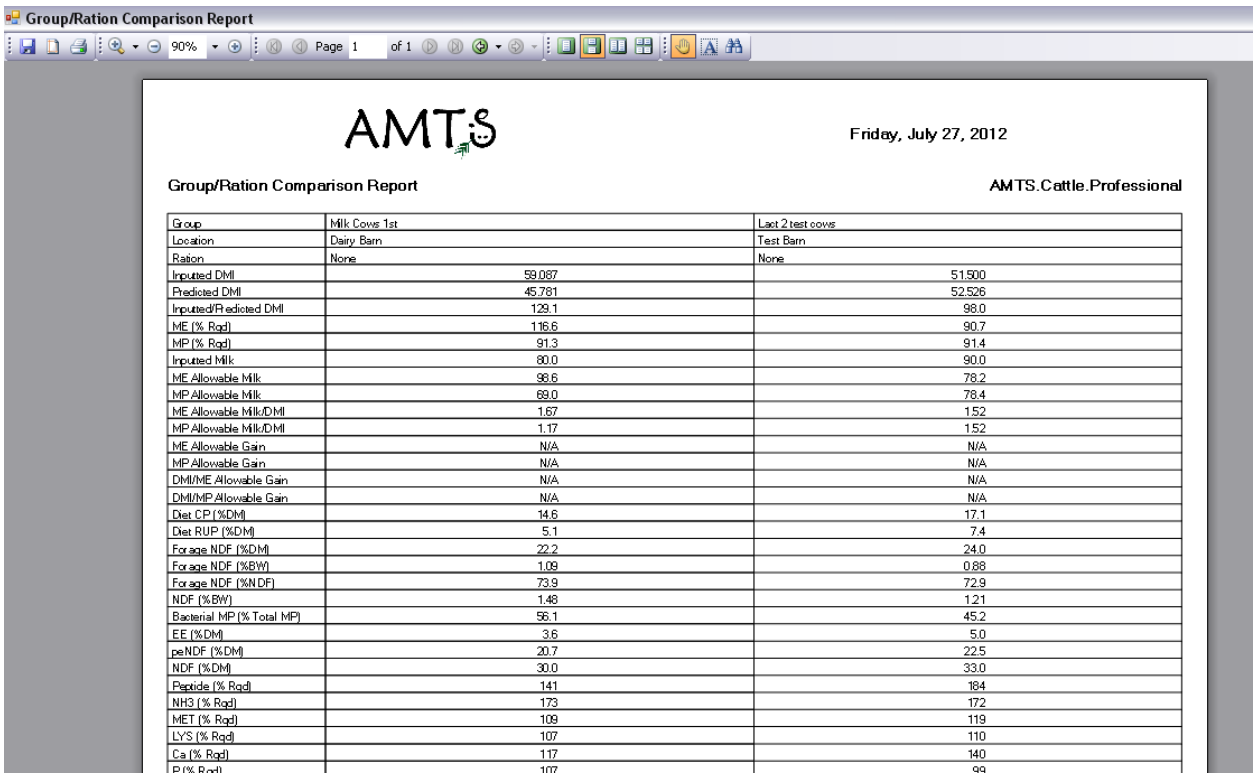
Conveniently, the Cattle Groups are preceded by their location so that, if you want to look at certain groups in certain locations, you do not have to remember whether, for example, Group one cows are in the Dairy Barn or the Test Barn.

6.2 Group/Ration Comparison Report

This report is an easy way to compare diet outputs side-by-side



The report generated from these selections looks thus:

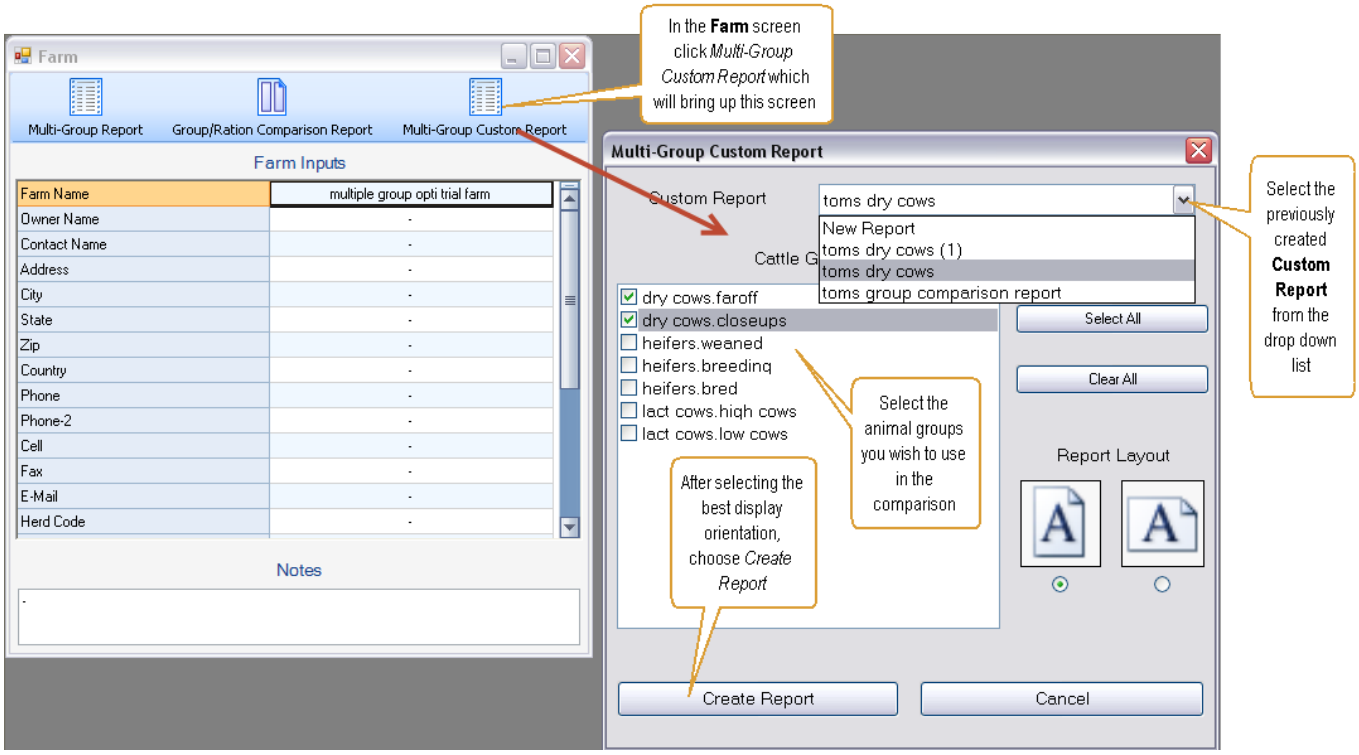


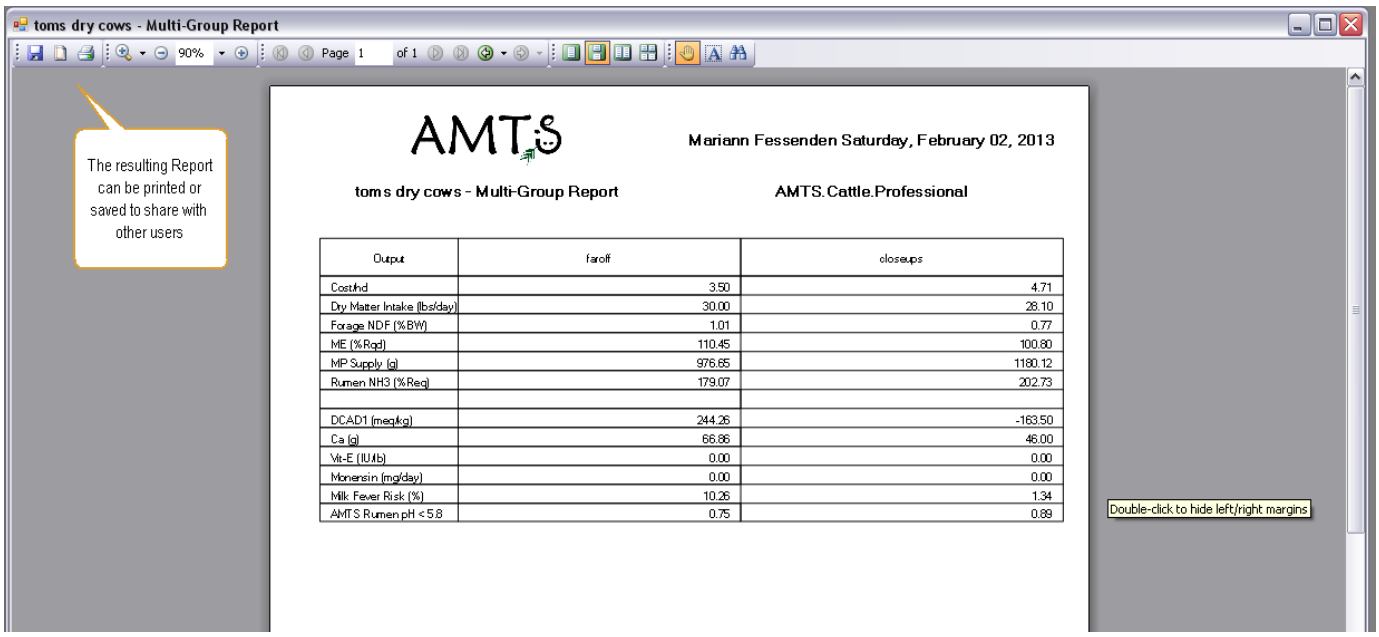
Group	Milk Cows 1st	Last 2 test cows
Location	Dairy Barn	Test Barn
Ration	None	None
Inputted DMI	59.087	51.500
Predicted DMI	45.781	52.526
Inputted/Predicted DMI	129.1	98.0
ME (% Rqd)	116.6	90.7
MP (% Rqd)	91.3	91.4
Inputted Milk	80.0	90.0
ME Allowable Milk	98.6	78.2
MP Allowable Milk	69.0	78.4
ME Allowable Milk/DMI	1.67	1.52
MP Allowable Milk/DMI	1.17	1.52
ME Allowable Gain	N/A	N/A
MP Allowable Gain	N/A	N/A
DMI/ME Allowable Gain	N/A	N/A
DMI/MP Allowable Gain	N/A	N/A
Diet CP (%DM)	14.6	17.1
Diet RUP (%DM)	5.1	7.4
Forage NDF (%DM)	22.2	24.0
Forage NDF (%BW)	1.09	0.88
Forage NDF (%NDF)	73.9	72.9
NDF (%BW)	1.48	1.21
Bacterial MP (% Total MP)	56.1	45.2
EE (%DM)	3.6	5.0
peNDF (%DM)	20.7	22.5
NDF (%DM)	30.0	33.0
Peptide (% Rqd)	141	184
NH3 (% Rqd)	173	172
MET (% Rqd)	109	119
LYS (% Rqd)	107	110
Ca (% Rqd)	117	140
P (% Rqd)	107	99

This report is a nice way to compare groups side by side.

6.3 Multi-Group Custom Report

This report allows you to select a custom report you have created in the *Reports* tab found under *Recipes* (page 81) and view it with inputs across more than one group, all groups in a given location, or all groups on the farm.



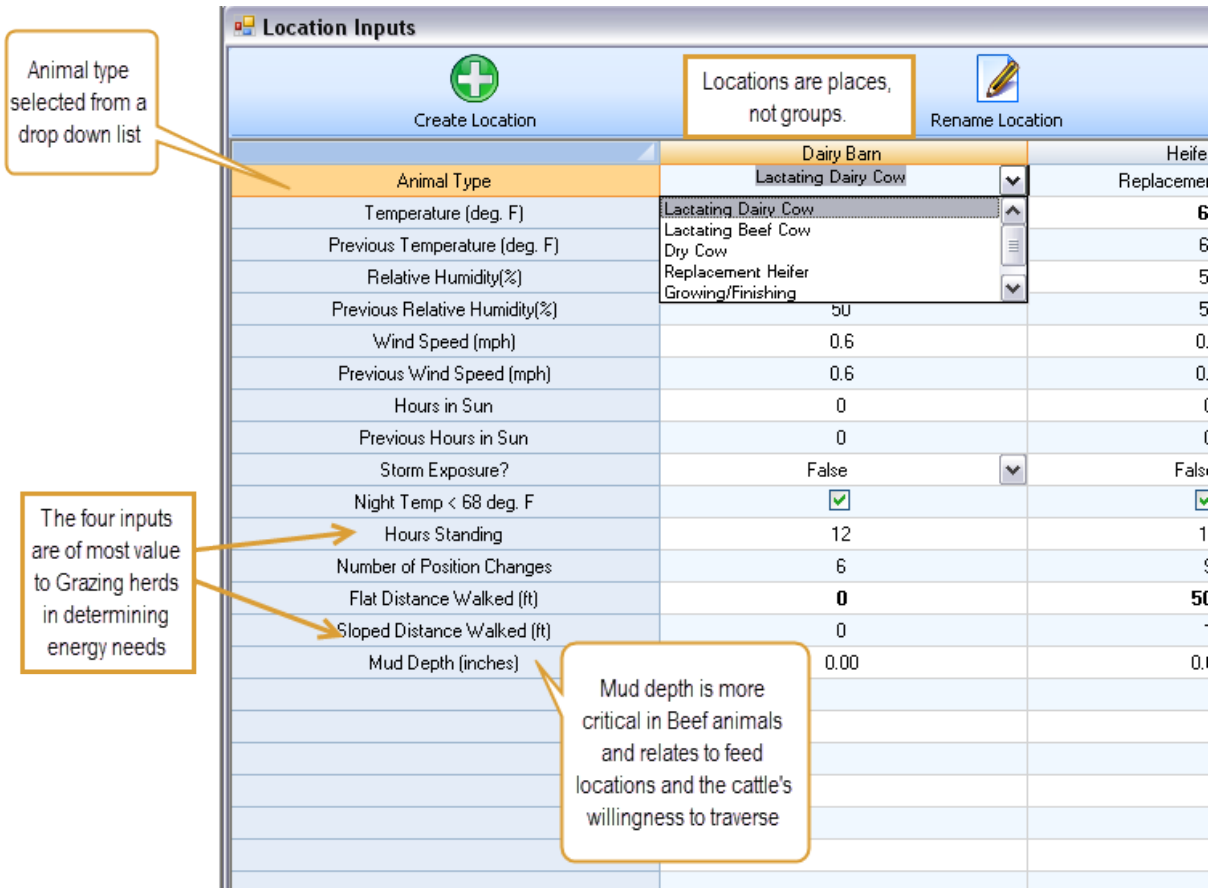

toms dry cows - Multi-Group Report
90%
Page 1 of 1
The resulting Report can be printed or saved to share with other users
AMTS
Mariann Fessenden Saturday, February 02, 2013
toms dry cows - Multi-Group Report
AMTS.Cattle.Professional
Double-click to hide left/right margins

Output	faroff	closeups
Cost/hd	3.50	4.71
Dry Matter Intake (lbs/day)	30.00	28.10
Forage NDF (%BW)	1.01	0.77
ME (%Rqd)	110.45	100.80
MP Supply (g)	976.65	1180.12
Rumen NH3 (%Req)	179.07	202.73
DCAD1 (meq/kg)	244.26	-163.50
Ca (g)	66.86	46.00
Vit-E (IU/lb)	0.00	0.00
Monensin (mg/day)	0.00	0.00
Milk Fever Risk (%)	10.26	1.34
AMTS Rumen pH < 5.8	0.75	0.89

7.0 Locations

Locations describe where cattle are housed. For example, for a free-stall dairy operation that raises their own replacements, one could have a location for lactating cows, one for dry cows, one for heifers less than 12 months of age, and one for heifers greater than 12 months of age. For a feedlot, there may only be one location.

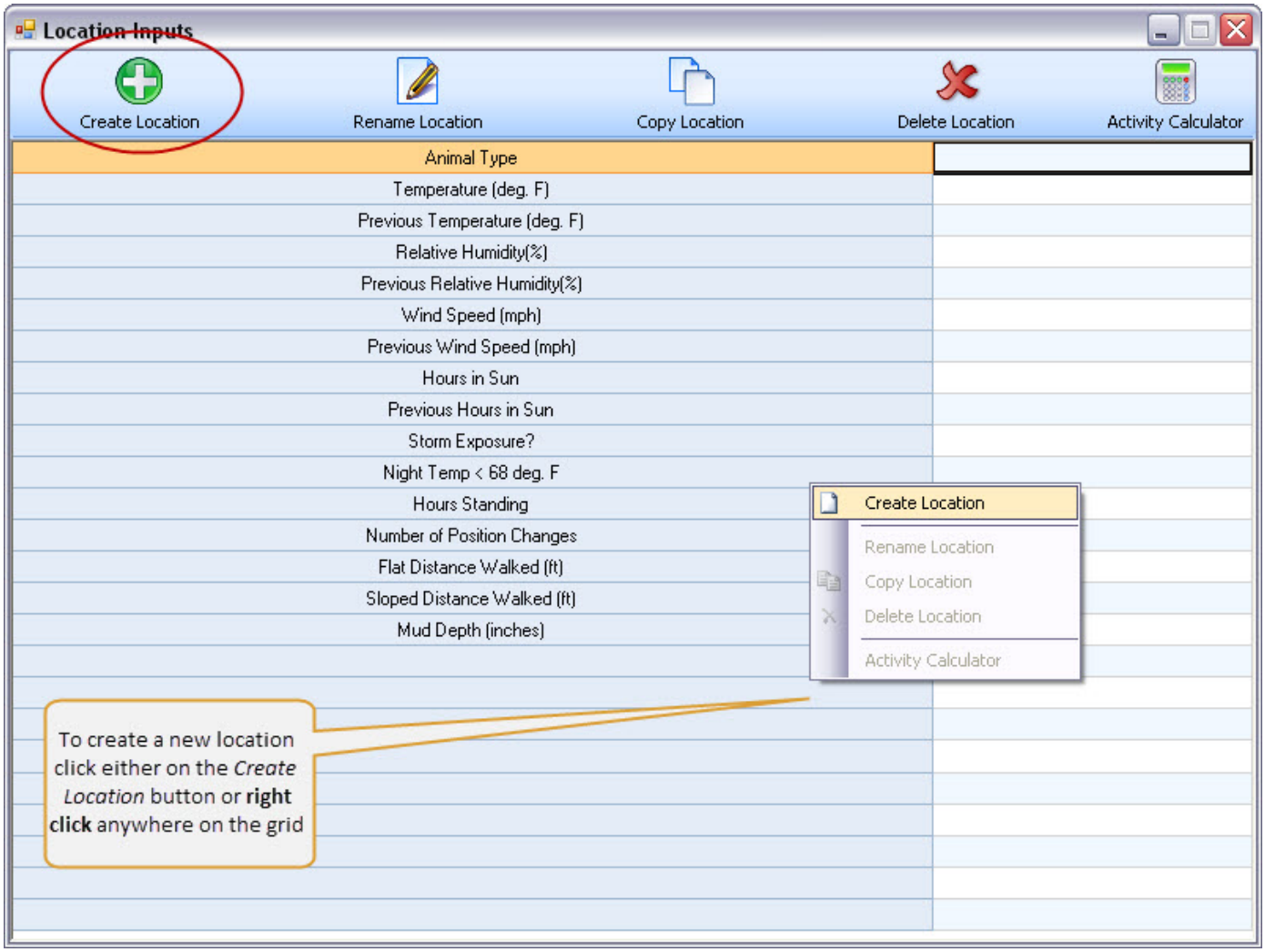
When thinking of how the program will handle information, remember the hierarchy: “The Recipe is King”, then location, then group. You can specify the same recipe across locations and groups; additionally, many groups can be in one location. You cannot have the reverse.



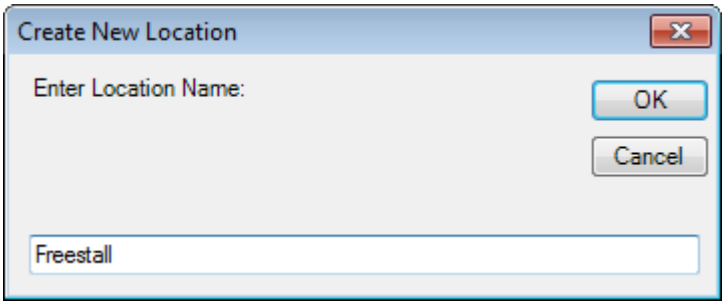
Locations are where the power of **.Pro** begins. You can have as many locations as you desire; all of the inputs within a given location are then used within each cattle group that is housed in that location. Back to our dairy example: the dry cow location may have two groups in it, close-ups and far-offs. Yet these two groups will share the temperature, humidity, and other inputs. **.Pro** streamlines data inputs so that information need only be entered once and then copied.

7.1 Create Location

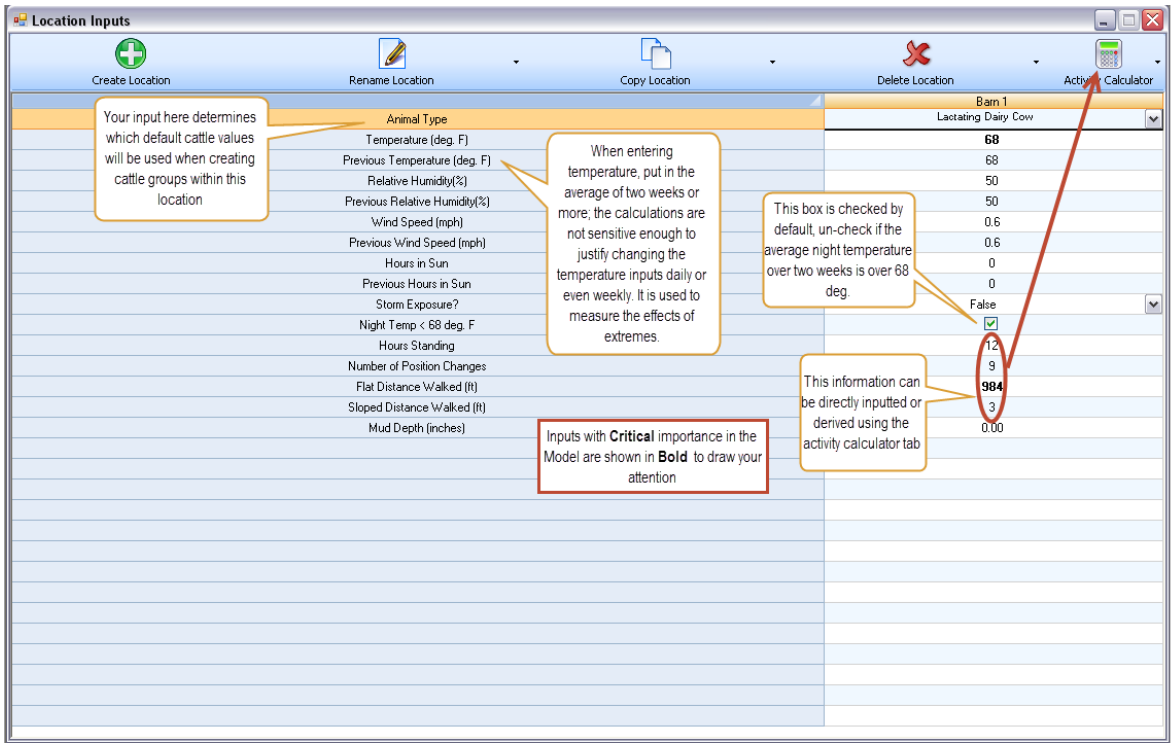
When you create a new location, you will be asked to give it a name. Names must begin with a letter and can only be alpha-numeric. Once you click on OK, a new column will appear on the



Locations form.



Inputs of interest on the Locations form are:


Location Inputs
Create Location
Rename Location
Copy Location
Delete Location
Activity Calculator
Your input here determines which default cattle values will be used when creating cattle groups within this location
Animal Type
Barn 1
Lactating Dairy Cow
Temperature (deg. F)
Previous Temperature (deg. F)
Relative Humidity(%)
Previous Relative Humidity(%)
Wind Speed (mph)
Previous Wind Speed (mph)
Hours in Sun
Previous Hours in Sun
Storm Exposure?
Night Temp < 68 deg. F
Hours Standing
Number of Position Changes
Flat Distance Walked (ft)
Sloped Distance Walked (ft)
Mud Depth (inches)
68
68
50
50
0.6
0.6
0
0
False
12
3
984
3
0.00
When entering temperature, put in the average of two weeks or more; the calculations are not sensitive enough to justify changing the temperature inputs daily or even weekly. It is used to measure the effects of extremes.
This box is checked by default, un-check if the average night temperature over two weeks is over 68 deg.
This information can be directly inputted or derived using the activity calculator tab
Inputs with Critical importance in the Model are shown in Bold to draw your attention

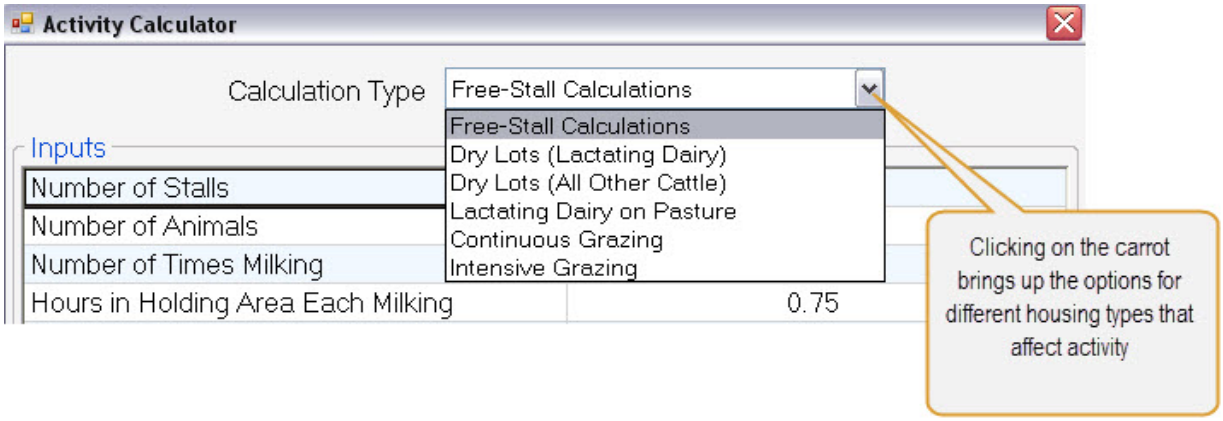
As you make inputs, you can move to the next cell by using the arrow keys, mouse, or the tab key. If you have multiple locations, tab will move you left to right across locations. **Make special note of the inputs shown in Bold font. Those numbers will have the greatest effect on the Model. Attention to those inputs will translate to greater than 90% accuracy in predictions.** For quick evaluations focus on the **Bolded** inputs.

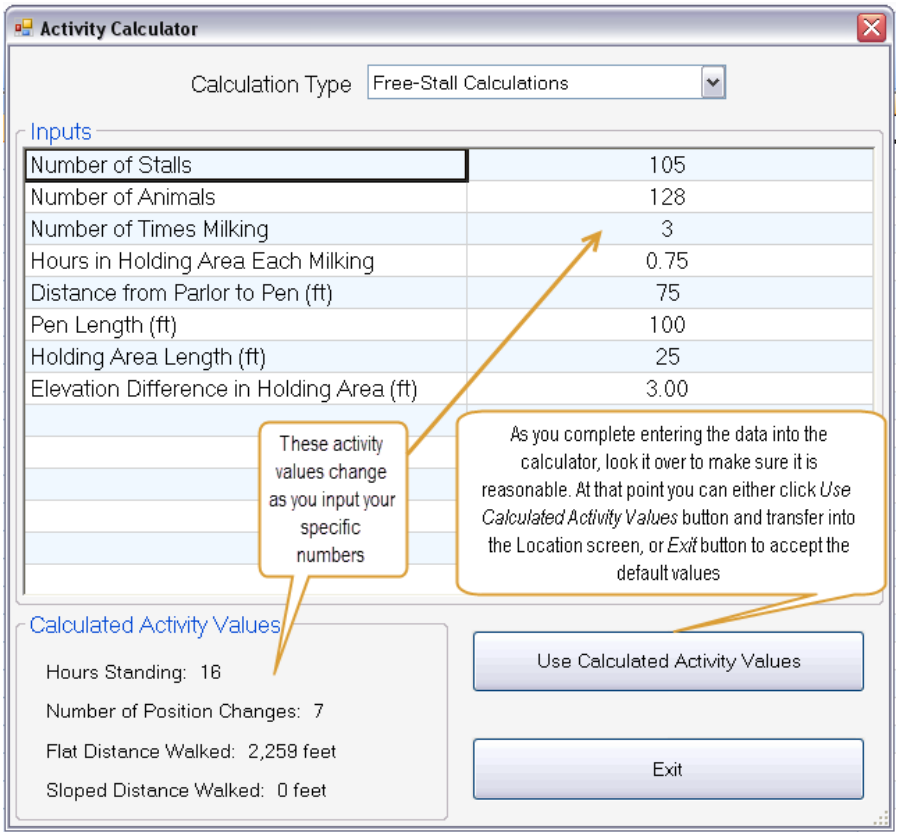
After you create and modify your first location, you can also copy and paste locations (then rename the copy) to quickly populate the location form. This can leave you with just a handful of inputs to change between locations.

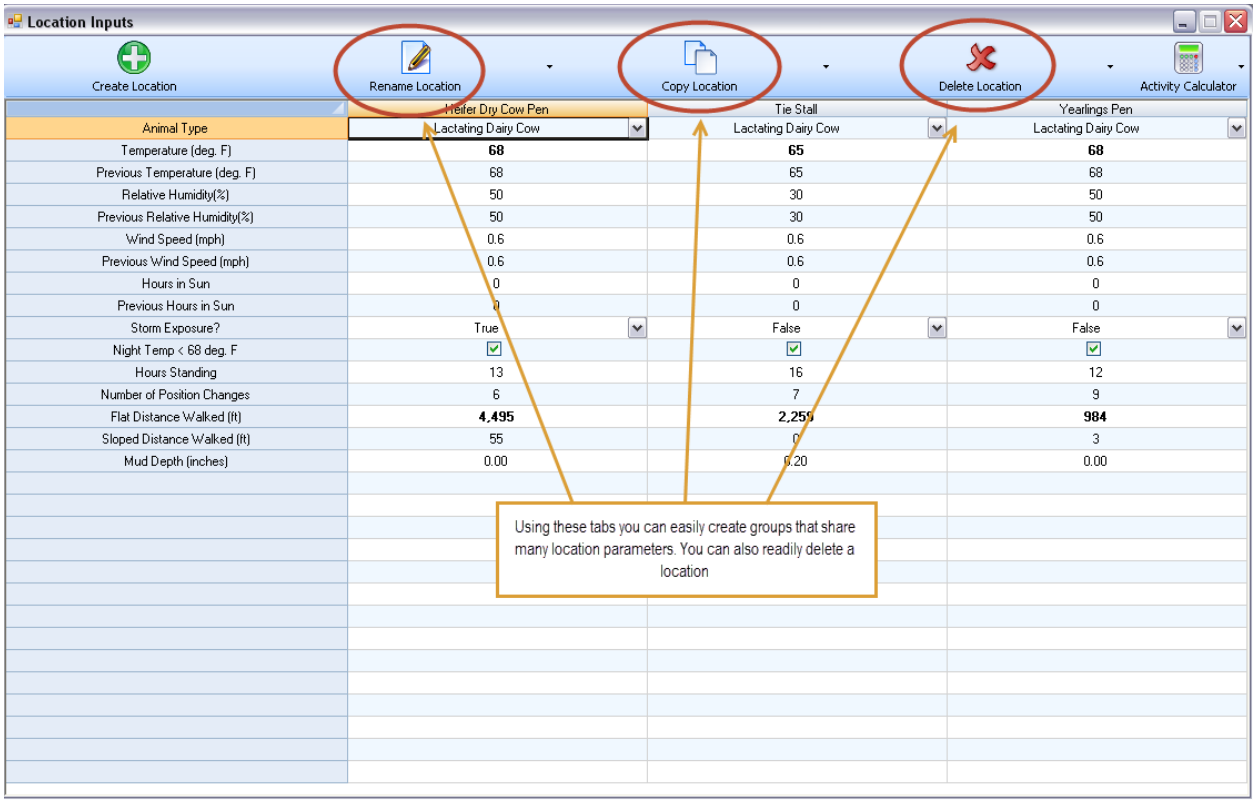
7.2 Activity Calculator:

At the bottom we're asking for flat distance walked. No one expects you to know exactly how far the animals are walking and many times they change positions but, this can have a tre-

mendous affect on the amount of milk produced so and is commonly grossly underestimated. Activity can make a big difference in the requirements of an animal; an animal on pasture in a grazing system will have a very different energy expenditure than an animal in a freestall system.



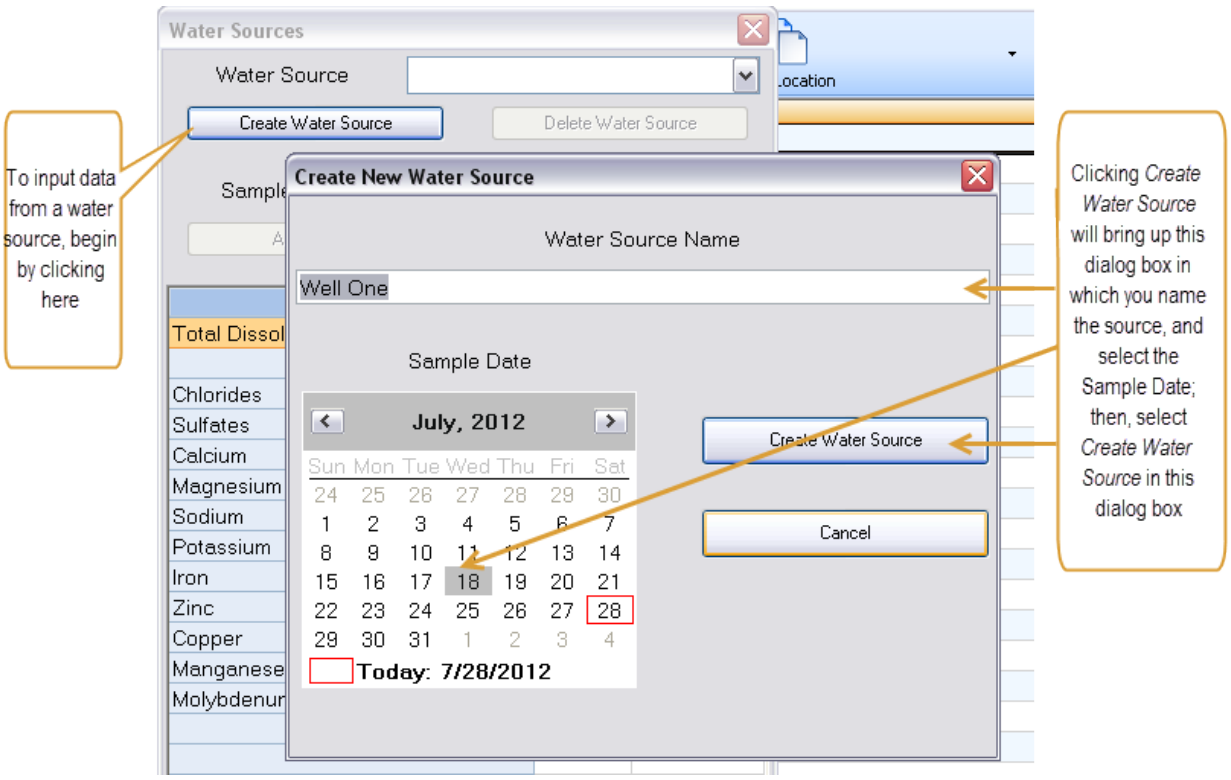

Activity Calculator
Calculation Type
Free-Stall Calculations
Inputs
Number of Stalls 105
Number of Animals 128
Number of Times Milking 3
Hours in Holding Area Each Milking 0.75
Distance from Parlor to Pen (ft) 75
Pen Length (ft) 100
Holding Area Length (ft) 25
Elevation Difference in Holding Area (ft) 3.00
These activity values change as you input your specific numbers
As you complete entering the data into the calculator, look it over to make sure it is reasonable. At that point you can either click Use Calculated Activity Values button and transfer into the Location screen, or Exit button to accept the default values
Calculated Activity Values
Hours Standing: 16
Number of Position Changes: 7
Flat Distance Walked: 2,259 feet
Sloped Distance Walked: 0 feet
Use Calculated Activity Values
Exit

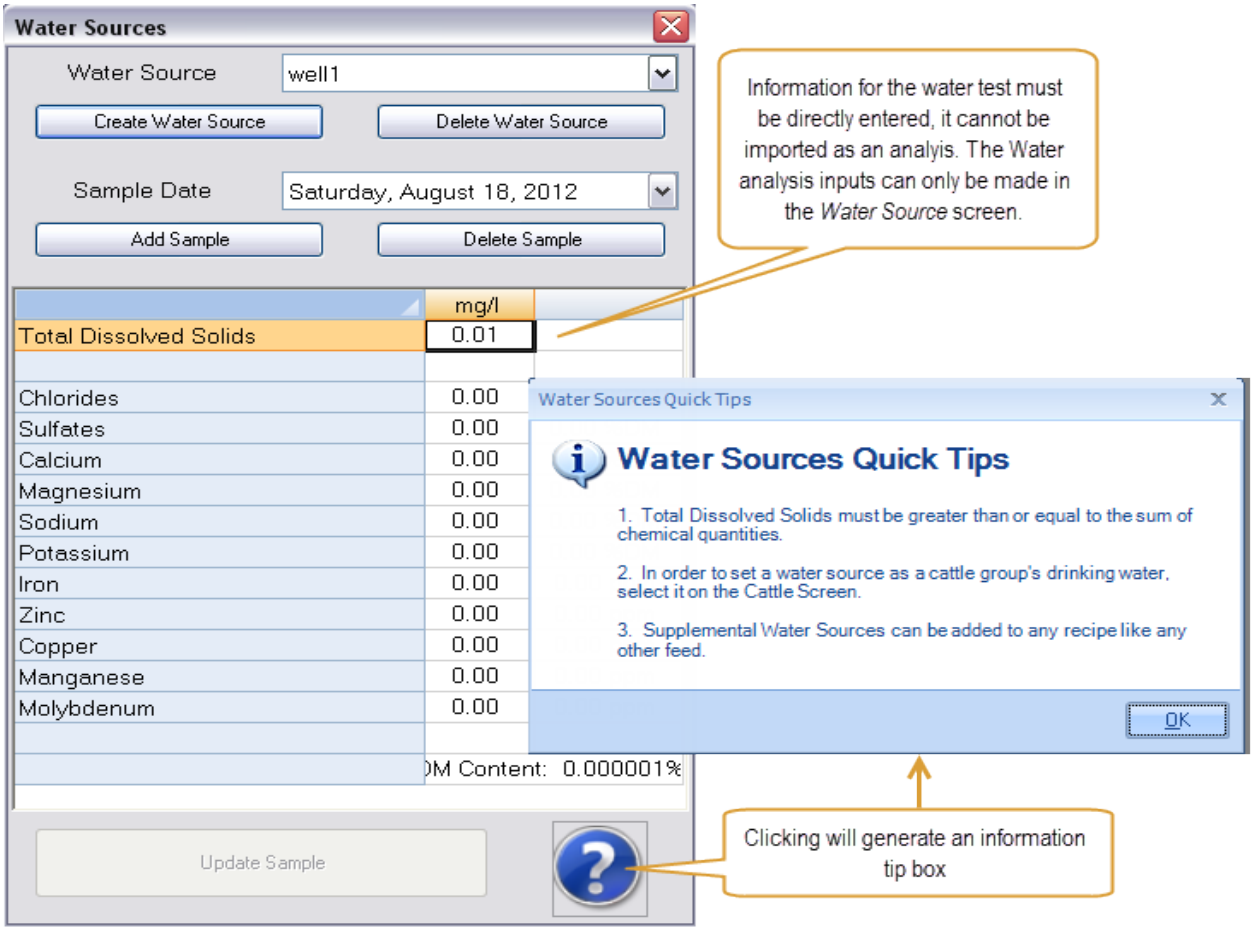


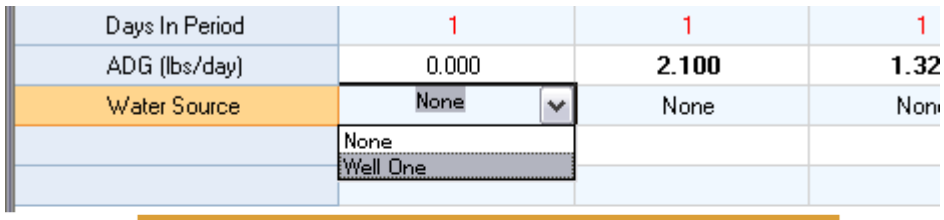
When you copy and paste a location, all the groups and recipes will come with it. This saves time and avoids repetitive data input. Conversely, the nature of a single physical location can be so large that it may best be handled by breaking it into two or more location designations. Information derived from this differentiation of location will be more precise.

8.0 Water Sources

Add water sample nutrient analyses under the water source tab.

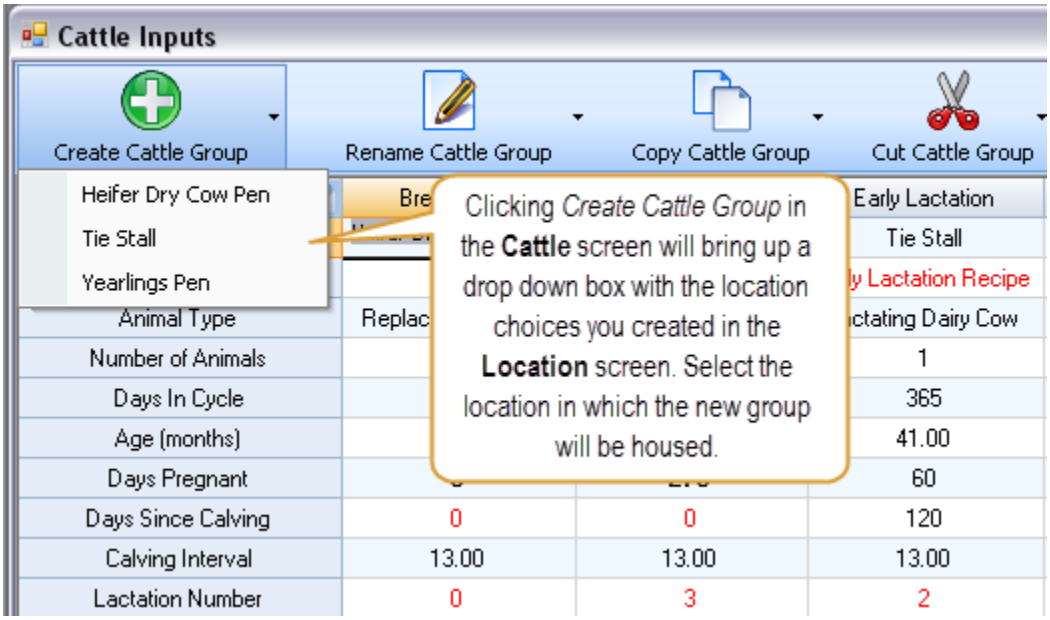

Water Sources
Water Source
Create Water Source
Delete Water Source
To input data from a water source, begin by clicking here
Create New Water Source
Water Source Name
Well One
Sample Date
July, 2012
Sun Mon Tue Wed Thu Fri Sat
Today: 7/28/2012
Create Water Source
Cancel
Clicking Create Water Source will bring up this dialog box in which you name the source, and select the Sample Date; then, select Create Water Source in this dialog box


Water Sources
Water Source
well1
Create Water Source
Delete Water Source
Sample Date
Saturday, August 18, 2012
Add Sample
Delete Sample
mg/l
Total Dissolved Solids
0.01
Chlorides 0.00
Sulfates 0.00
Calcium 0.00
Magnesium 0.00
Sodium 0.00
Potassium 0.00
Iron 0.00
Zinc 0.00
Copper 0.00
Manganese 0.00
Molybdenum 0.00
Update Sample
Information for the water test must be directly entered, it cannot be imported as an analyis. The Water analysis inputs can only be made in the Water Source screen.
Water Sources Quick Tips
Water Sources Quick Tips
1. Total Dissolved Solids must be greater than or equal to the sum of chemical quantities.
2. In order to set a water source as a cattle group's drinking water, select it on the Cattle Screen.
3. Supplemental Water Sources can be added to any recipe like any other feed.
OK
Clicking will generate an information tip box



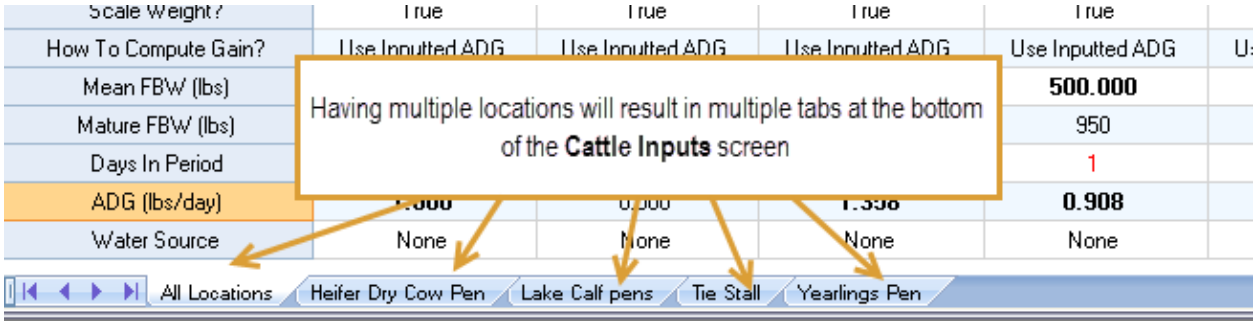
Water sources can be used as a feed ingredient in a diet. Water added in this screen will appear as a feed ingredient available for use in rations and in balancing mineral inputs in the diet.

9.0 Cattle (Groups)



You can have as many groups as you'd like. You can even feed every cow individually, **Rename the Group**, **Cut the Group**, or **Copy a Group**; the buttons on the tool bar make it all

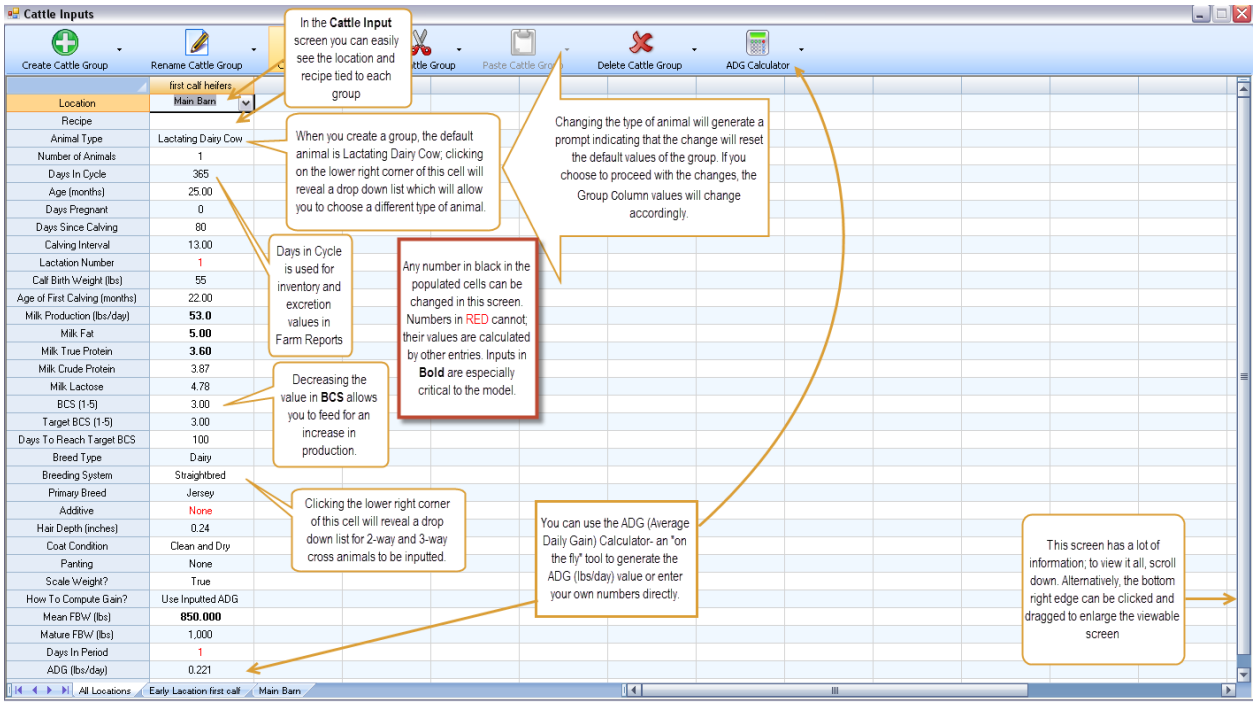
very quick and easy! If you only created one location on the **Location** form, you will see no tabs at the bottom of the Cattle Inputs form. If you have more than one location, at the bottom of the input form you will see tabs for each location. By default, the first tab will be all groups in all the locations on the farm; selecting one of the tab locations will enable you to focus on the groups in a given location.



Creating multiple Locations causes the Cattle Inputs form to have multiple tabs (like an Excel spreadsheet) with each tab representing a location. Here you have a choice: you can either work on the All Locations tab or work on the tab relating to a specific location. The inputs required by each cattle type will be customized to that cattle type. Those that cannot be edited are in **RED**.

It is easier to work within a Location (e.g. Lactating Cows), create the first group (e.g. Fresh Cows) and then use the copy and paste function to create new cattle groups within the location (e.g. High Cows, Low Cows). Again, this method allows you to quickly populate the file as you only have a handful of inputs that must be altered between groups. Cattle groups can be cut, copied and pasted between locations.

When working in farms where the goal is to increase milk production, the inputs into this form can be manipulated to develop rations to attain those goals i.e., input a lower BC score than target to create a ration that makes more milk.

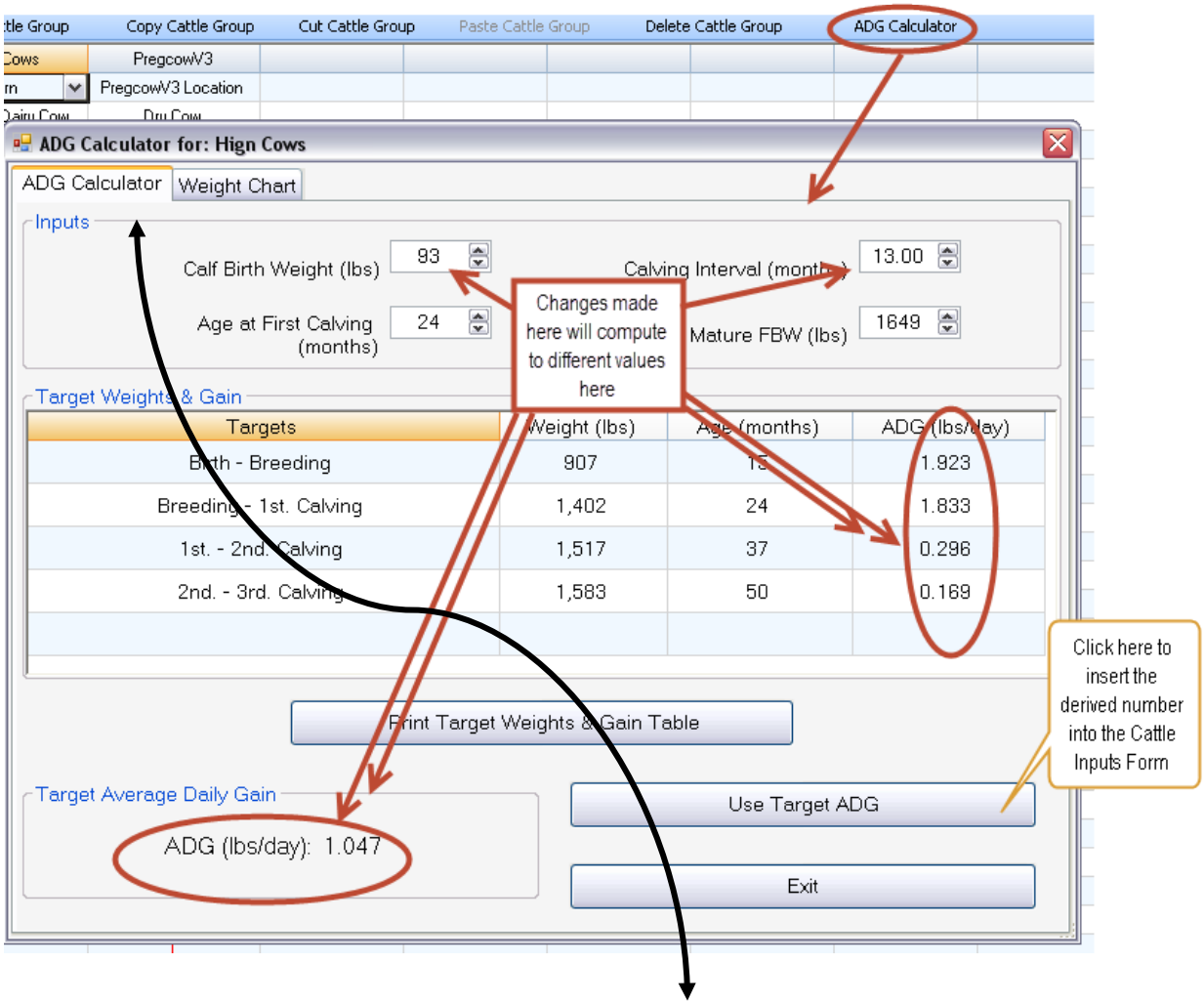

Cattle Inputs
Create Cattle Group
Rename Cattle Group
Delete Cattle Group
ADG Calculator
In the **Cattle Input** screen you can easily see the location and recipe tied to each group
When you create a group, the default animal is Lactating Dairy Cow; clicking on the lower right corner of this cell will reveal a drop down list which will allow you to choose a different type of animal.
Changing the type of animal will generate a prompt indicating that the change will reset the default values of the group. If you choose to proceed with the changes, the Group Column values will change accordingly.
Days in Cycle is used for inventory and excretion values in Farm Reports
Any number in black in the populated cells can be changed in this screen. Numbers in RED cannot; their values are calculated by other entries. Inputs in **Bold** are especially critical to the model.
Decreasing the value in **BCS** allows you to feed for an increase in production.
Clicking the lower right corner of this cell will reveal a drop down list for 2-way and 3-way cross animals to be inputted.
You can use the ADG (Average Daily Gain) Calculator- an "on the fly" tool to generate the ADG (lbs/day) value or enter your own numbers directly.
This screen has a lot of information; to view it all, scroll down. Alternatively, the bottom right edge can be clicked and dragged to enlarge the viewable screen
All Locations
Early Lacation first calf
Main Barn

Mature full body weight would be any animal in their 4th lactation or higher. **It is important that the Mature FBW is accurate. Almost EVERY animal requirement is derived using this number.**

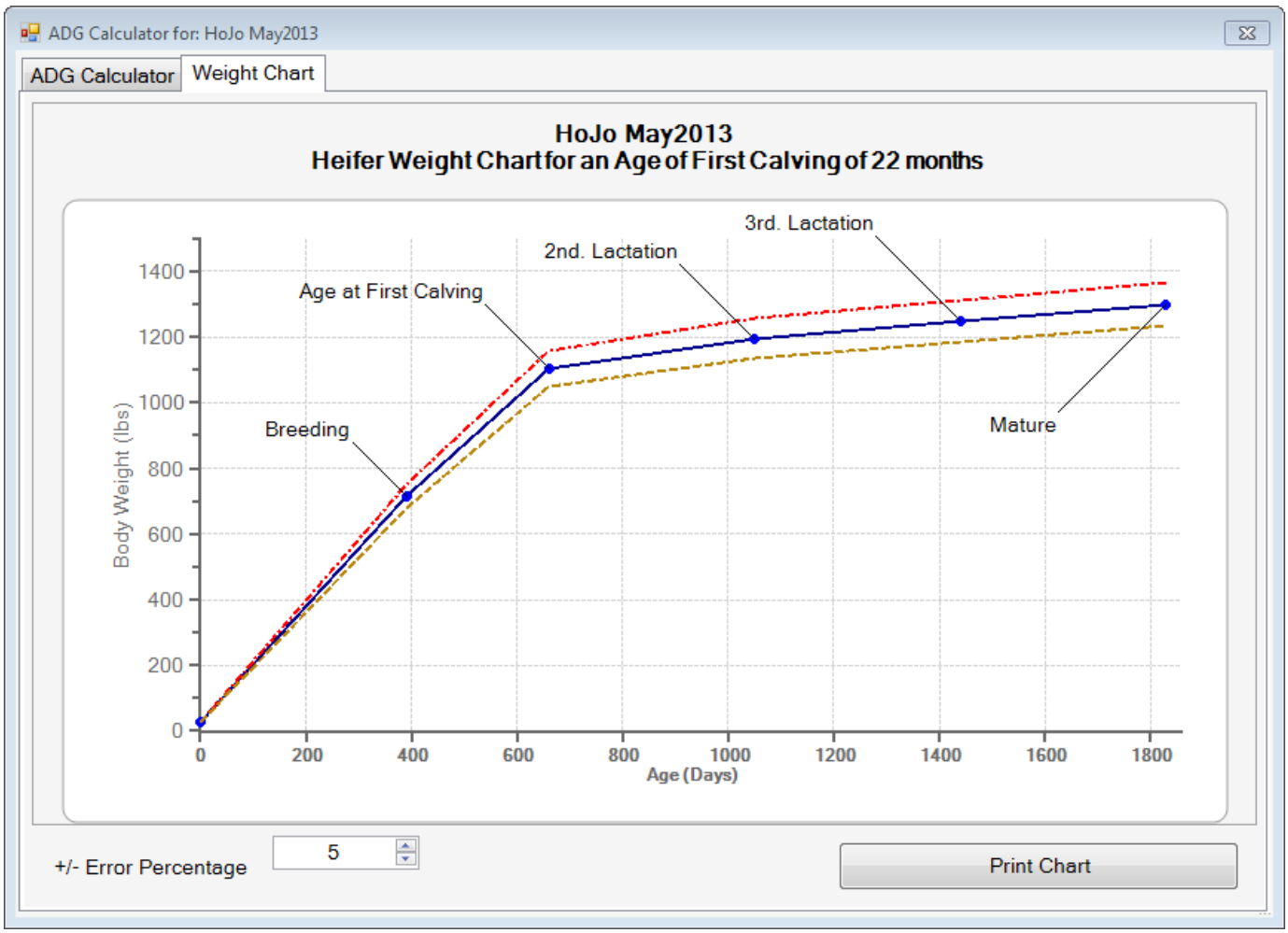
TIP: Recipes assigned to a group will be copied when you copy and paste on the cattle page.

Make special note of the inputs shown in **Bold** font. Those numbers will have the greatest effect on the Model. Attention to those inputs will translate to greater than 90% accuracy in predictions. For quick evaluations focus on the **Bolded** inputs.

9.1 Average Daily Gain Calculator



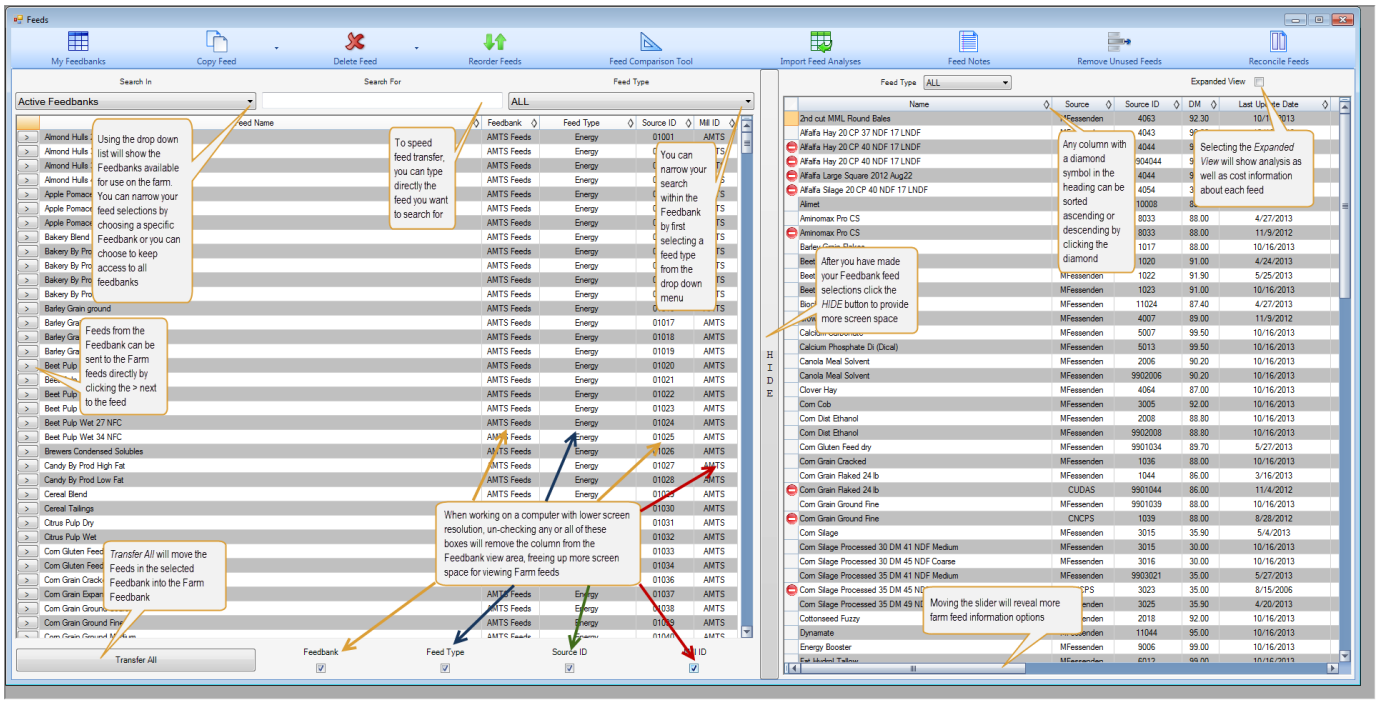
Notice that two tabs: *ADG Calculator* and *Weight Chart*; you can print reports from both tabs to generate custom growth charts and tables for your clients. Many producers are visual learners and this chart can be a very powerful tool to help producers see where improvements can be made with growing heifers. Print the now and what-if charts and show the difference.



10.0 Working with Farm Feeds

The next step is to add feeds to the farm file.

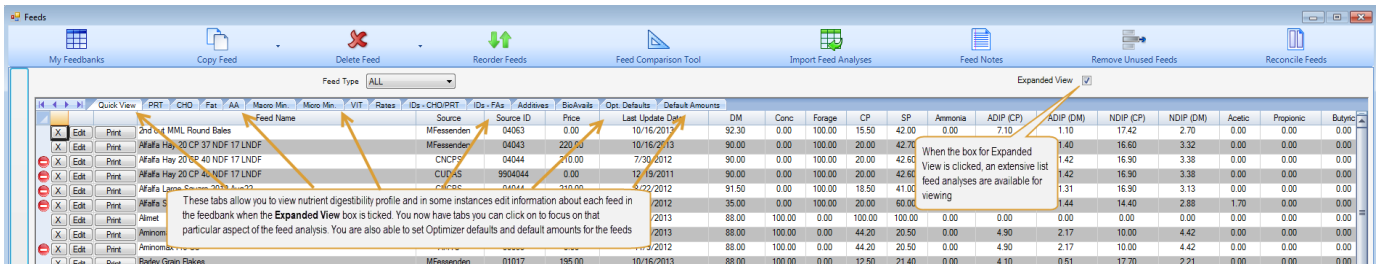
10.1 Feed Screen

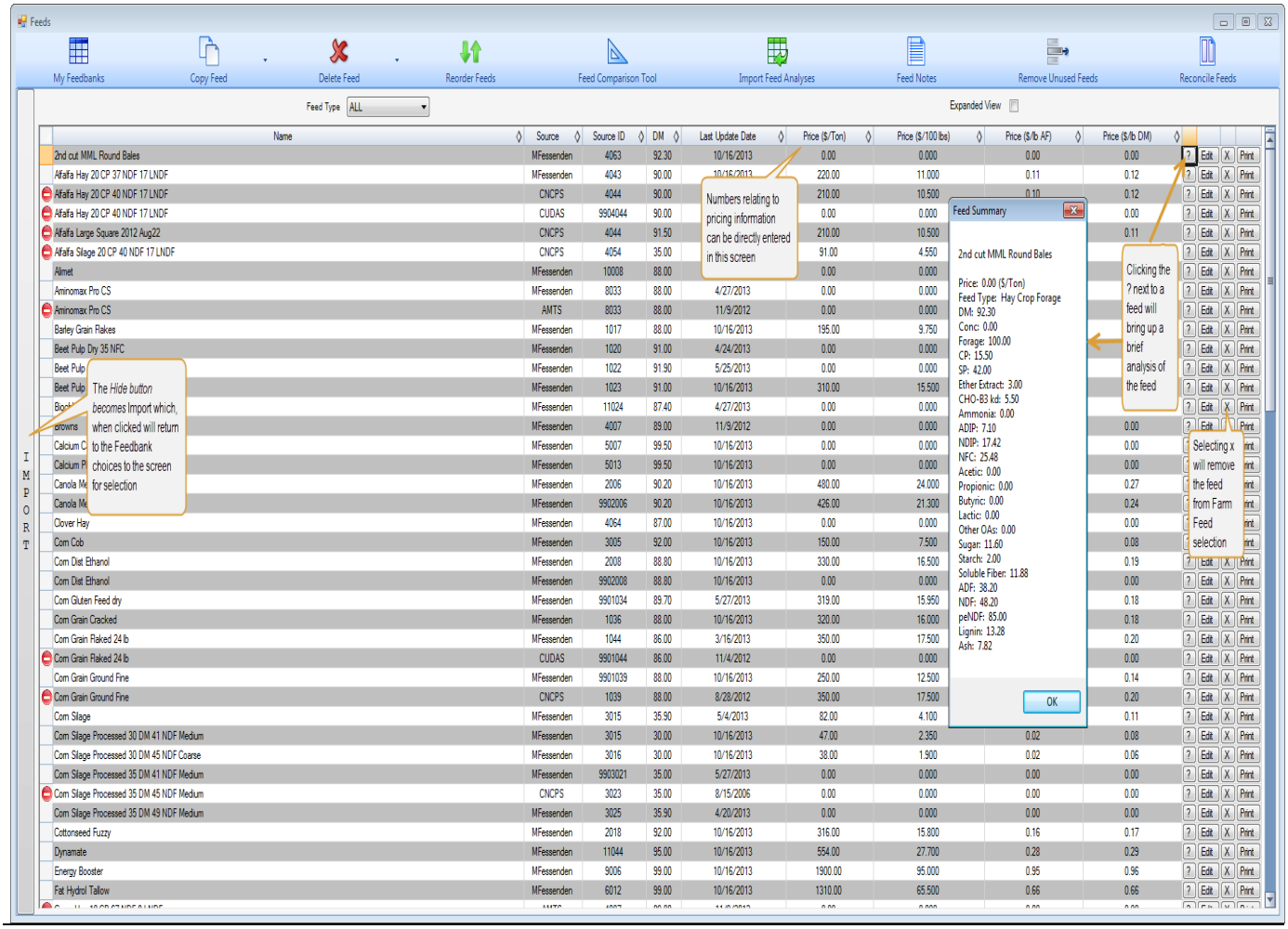

Feeds
My Feedbanks
Copy Feed
Delete Feed
Reorder Feeds
Feed Comparison Tool
Import Feed Analyses
Feed Notes
Remove Unused Feeds
Reconcile Feeds
Search In
Search For
Feed Type
Active Feedbanks
ALL
Using the drop down list will show the Feedbanks available for use on the farm. You can narrow your feed selections by choosing a specific Feedbank or you can choose to keep access to all feedbanks
To speed feed transfer, you can type directly the feed you want to search for
You can narrow your search within the Feedbank by first selecting a feed type from the drop down menu
Feeds from the Feedbank can be sent to the Farm feeds directly by clicking the > next to the feed
Transfer All will move the Feeds in the selected Feedbank into the Farm Feedbank
When working on a computer with lower screen resolution, un-checking any or all of these boxes will remove the column from the Feedbank view area, freeing up more screen space for viewing Farm feeds
Transfer All
Feedbank
Feed Type
Source ID
Mill ID
HIDE
Feed Type
ALL
Expanded View
Name
Source
Source ID
DM
Last Update Date
Any column with a diamond symbol in the heading can be sorted ascending or descending by clicking the diamond
Selecting the Expanded View will show analysis as well as cost information about each feed
After you have made your Feedbank feed selections click the HIDE button to provide more screen space
Moving the slider will reveal more farm feed information options

Feed Categories are assigned by CNCPS based on the Data Source; the starting digit (s) provides a map to the Data Source following the table below. The **AMTS Feeds** follows this coding.

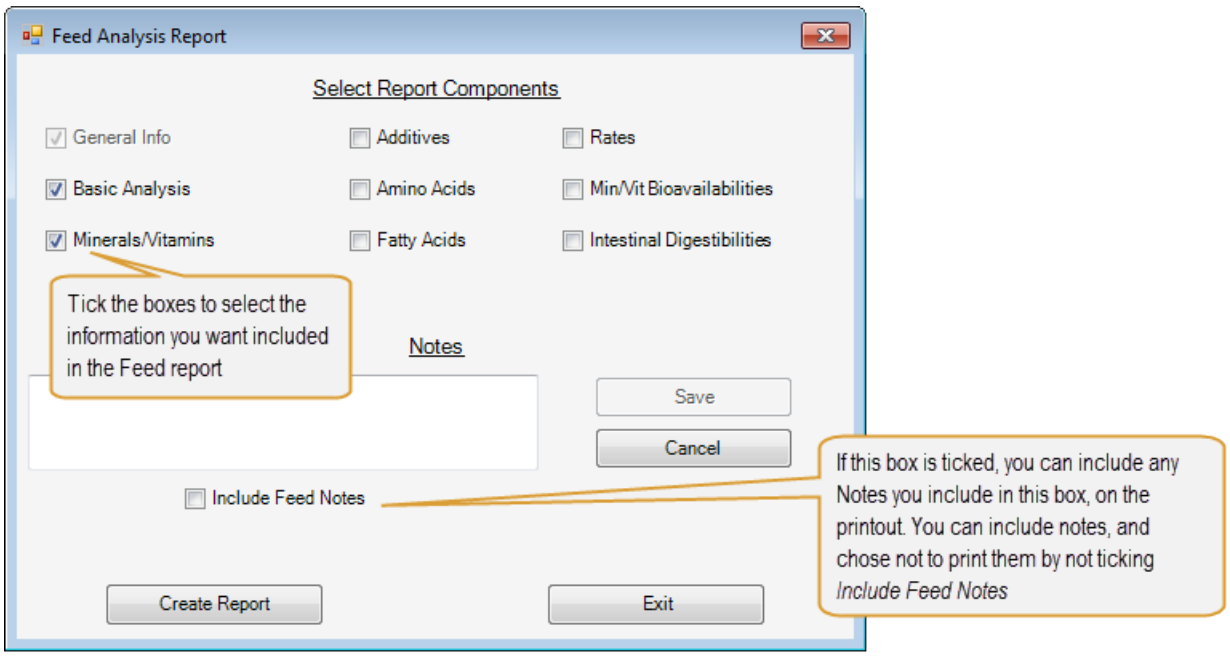
Category	CNCPS ID #	Data Source
Energy Feeds	1xxx	Cornell University and the Miner Institute
Plant Proteins	2xxx	Cornell University and the Miner Institute
Grain Type Forages	3xxx	Cornell University and the Miner Institute
Hay Crop Forages	4xxx	Cornell University and the Miner Institute
Generic Min/Vits	5xxx	Cornell University and the Miner Institute
Fats	6xxx:	Cornell University and the Miner Institute
Animal Proteins	7xxx	Cornell University and the Miner Institute
Commercial Proteins	8xxx	Manufacturers
Commercial Fats	9xxx	Manufacturers
Amino Acids	10xxx	Manufacturers
Commercial Min/Vits	11xxx	Manufacturers
Additives	12xxx	Manufacturers and AMTS™
Tropical Energy	13xxx	Cornell University
Tropical Proteins	14xxx	Cornell University
Tropical Grain Forage	15xxx	Cornell University
Tropical Hay Crop Forages	16xxx	Cornell University
Composites	Cxxxxx	

10.2 Using the Farm Feed Screen


Feeds
My Feedbanks
Copy Feed
Delete Feed
Reorder Feeds
Feed Comparison Tool
Import Feed Analyses
Feed Notes
Remove Unused Feeds
Reconcile Feeds
Feed Type
ALL
Expanded View
When the box for Expanded View is clicked, an extensive list feed analyses are available for viewing
These tabs allow you to view nutrient digestibility profile and in some instances edit information about each feed in the feedbank when the Expanded View box is ticked. You now have tabs you can click on to focus on that particular aspect of the feed analysis. You are also able to set Optimizer defaults and default amounts for the feeds

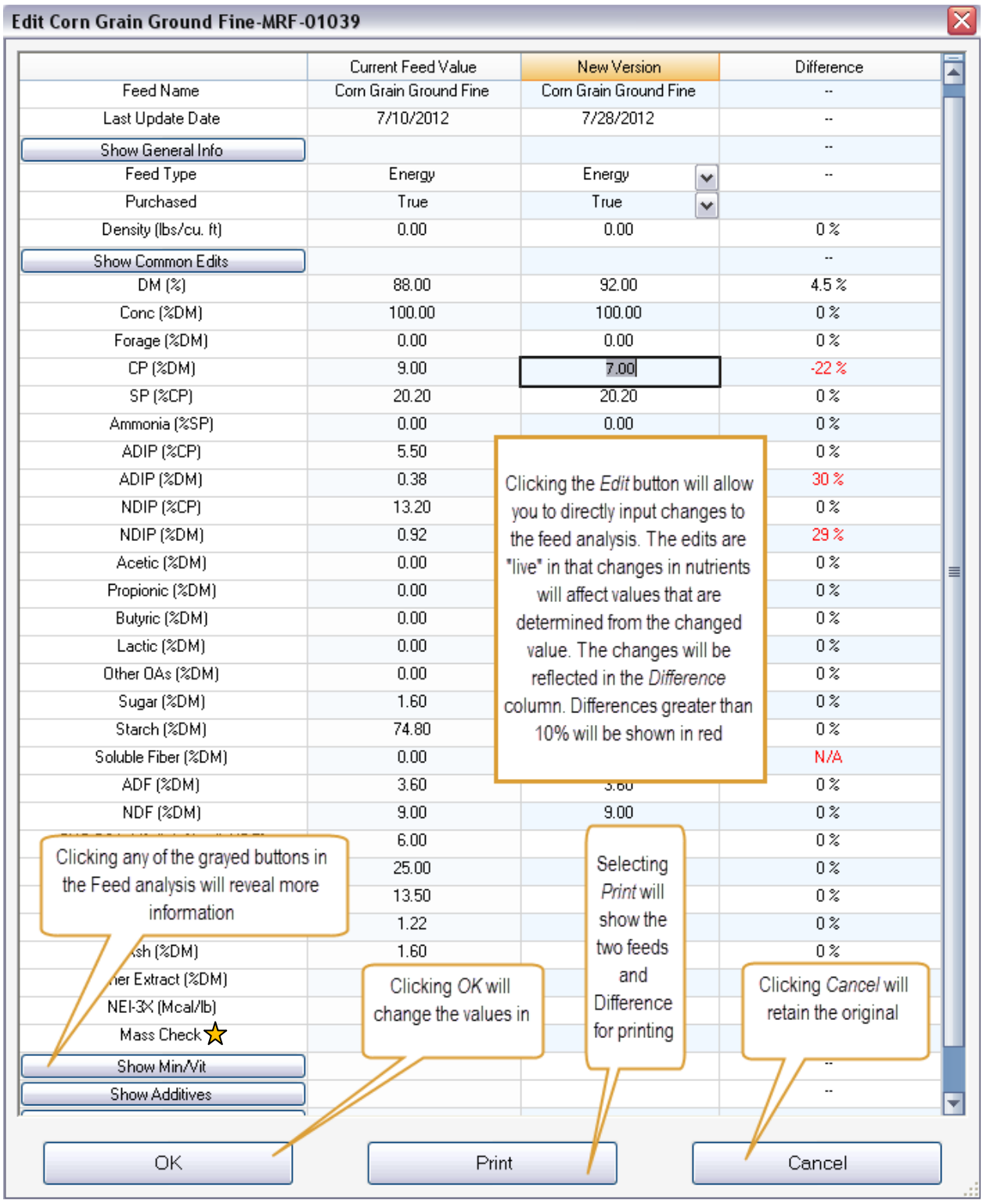


Selecting Print will generate a box from which you can generate a report for printing


Feed Analysis Report
Select Report Components
General Info
Additives
Rates
Basic Analysis
Amino Acids
Min/Vit Bioavailabilities
Minerals/Vitamins
Fatty Acids
Intestinal Digestibilities
Tick the boxes to select the information you want included in the Feed report
Notes
Save
Cancel
Include Feed Notes
If this box is ticked, you can include any Notes you include in this box, on the printout. You can include notes, and chose not to print them by not ticking Include Feed Notes
Create Report
Exit

10.3 Editing in the Feed Screen

Selecting the edit button next to the feed will bring up the work box below



You do NOT need to make a separate Feedbank for each farm; each farm has its own farm feeds from which rations are created. If you do have multiple Feedbanks, i.e.,AMTS, CNCPS, RUPDig; limit the number you use farm- pull your feeds from the same source as much as possible. Making too many Feedbanks can cause problems.

The last item under *Show Common Edits* header is something called **Mass Check**.(there is a ☆ next to it in our screen shot) The Mass Check is a simple calculation of **CP + Fat + Ash + NDF + VFAs + Sugar + Starch + Soluble Fiber**. (Remember, soluble fiber is calculated by difference). VFAs in 6.1 biology are inputs (acetic, propionic, butyric, lactic, and other organic acids).

In a perfect world (no errors in sampling or chemical methods), the mass check would always sum to 100. If it sums to 100-105%, this is well within laboratory methodology and sampling errors. Remember also that as long as you are consistent in the lab you use, the vast majority of the error lies with sample collection. So take a good sample! If the mass check is 106% or higher, take a careful look at the results. The error might be the result of a simple input error or it may be a sample that you want to call the lab and ask them to recheck.

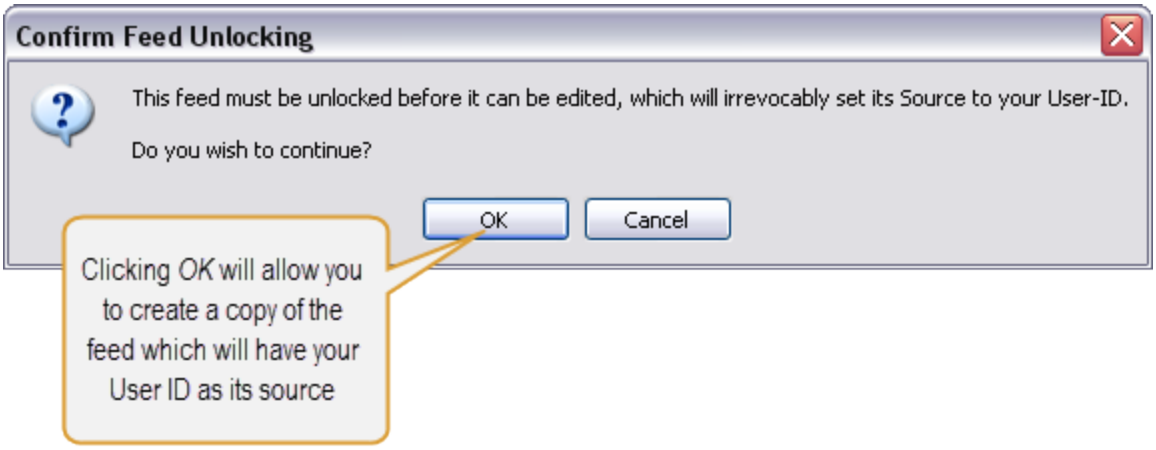
The prices you put into the feed screen do not have to be the same as the prices you optimize by, these are base prices.

10.4 Special feed attributes: locked feeds and mixes

10.4.1 Locked and Password Protected Feeds

Users who use feed libraries created in **AMTS.Pro** or **AMTS.FBM** will see one of 3 icons that indicate that a feed has a special status. Feeds in feedbanks created in **.Pro** or **.FBM** can be **locked**, or **password protected**.

The red circle with a white line next ⛔ to a feed means that the feed originated in someone else's feedbank or in **AMTS.FBM**. If you attempt to edit a feed with this attribute, you will see a warning. You can use these feeds; once you access a locked feed, the feed name will be changed to include your User ID.


Confirm Feed Unlocking
This feed must be unlocked before it can be edited, which will irrevocably set its Source to your User-ID.
Do you wish to continue?
OK
Cancel
Clicking OK will allow you to create a copy of the feed which will have your User ID as its source

If it's a feed that you created in **.Pro version 2** and you can't unlock it, check your User ID in the *Settings> User and Company Information.*

10.4.2 Mixes

There may be feeds that cannot be unlocked (e.g. Proprietary mixes). In that case, the symbol shown is a chain. In this case, all you can edit is the feed price. If a Feed Name is in red, then this feed is password protected and all you will see is the DM, NDF, Fat, Ash, and CP.

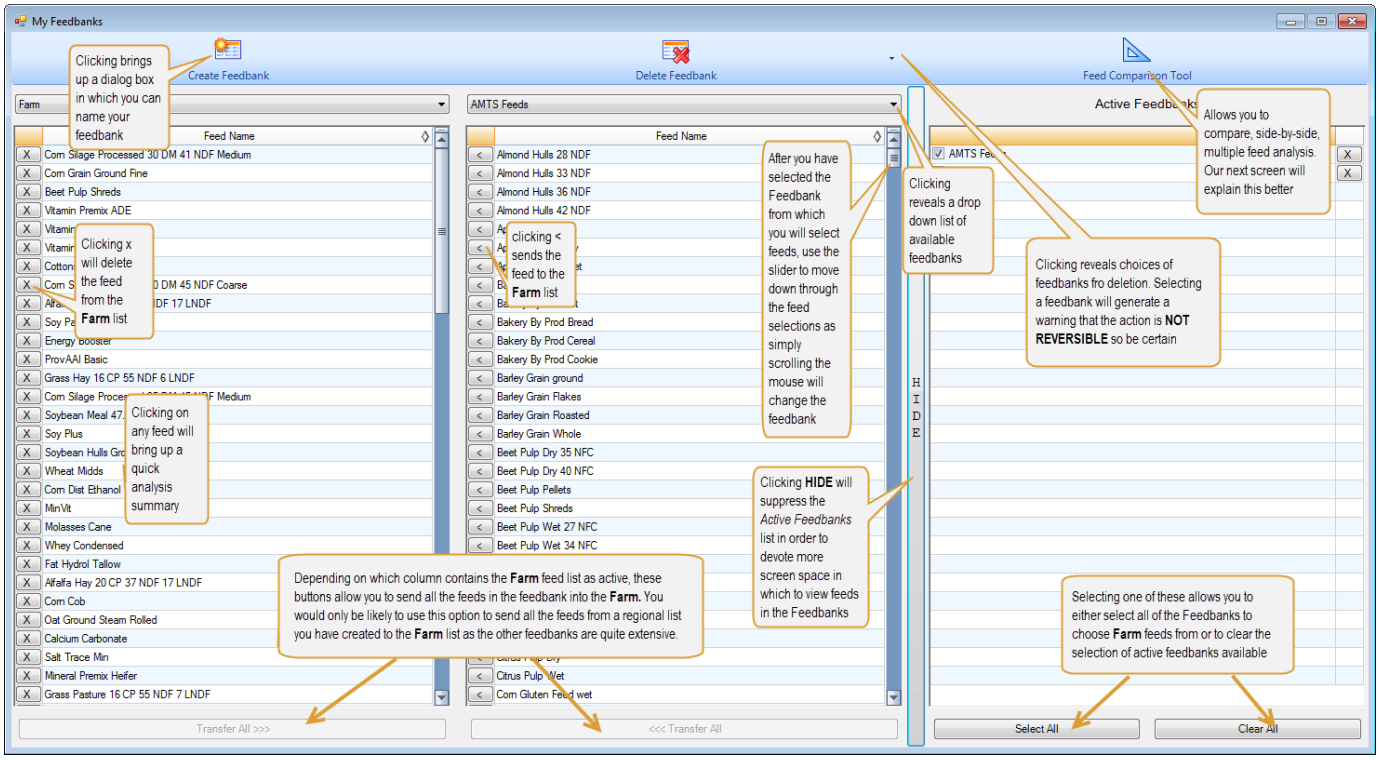
If there is a composite ("Mix") in the farm file, you will notice that the price is in grey. By default, a composite price is calculated as the weighted average of the prices of its component ingredients. If you input a price here, a warning message appears saying that you are breaking the link. Clicking OK turns the grey color to black and you can now input a price. This allows you to manually input a price for a composite to include margin, discounts, trucking, etc. If you input -1 as the price, you get a new message saying that the composite price will revert to a calculated value making the price cell grey again. Composites will always be kept as the last feeds in the farm feeds list.

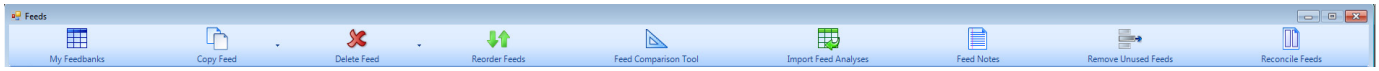
10.5 Using the Feed Screen Icons

10.5.1 My Feedbanks

Selecting this icon will bring up a screen in which you can create a Feedbank holding feeds available to you for use in rations on the farm. By default **AMTS** is populated with feeds from the following: AMTS Feeds and AMTS Updates. Additionally, when you select *Feedbank Manager* you will see *Farm* as an unpopulated option. *Farm* will hold the feeds available to you on that specific farm as you formulate rations. Within the **My Feedbanks** window you can create a feedbank of feeds you commonly use on a group of farms or in a region. This feedbank will be available to you for use on all the farms you work with and is a good place to locate proprietary mixes not found in any of the default feedbanks.

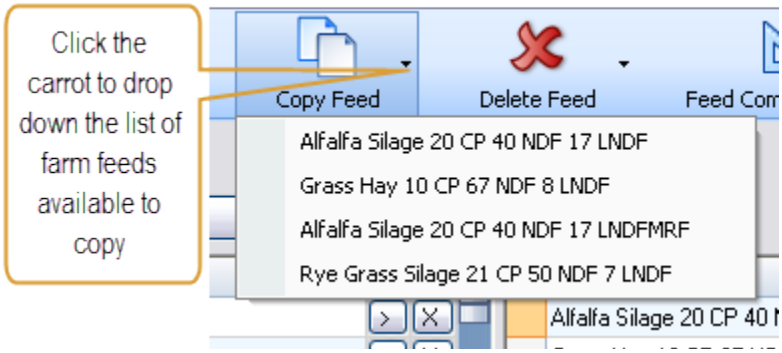
Creating a Regional Feedbank rather than a Feedbank *for each farm* you work with makes good sense. It allows you to readily input common ingredients and minimizes the number of feedbanks contained in the program.


My Feedbanks
Create Feedbank
Delete Feedbank
Feed Comparison Tool
Clicking brings up a dialog box in which you can name your feedbank
Farm
AMTS Feeds
Active Feedbanks
Feed Name
Clicking x will delete the feed from the Farm list
clicking < sends the feed to the Farm list
After you have selected the Feedbank from which you will select feeds, use the slider to move down through the feed selections as simply scrolling the mouse will change the feedbank
Clicking reveals a drop down list of available feedbanks
Allows you to compare, side-by-side, multiple feed analysis. Our next screen will explain this better
Clicking reveals choices of feedbanks fro deletion. Selecting a feedbank will generate a warning that the action is NOT REVERSIBLE so be certain
Clicking on any feed will bring up a quick analysis summary
HIDE
Clicking HIDE will suppress the Active Feedbanks list in order to devote more screen space in which to view feeds in the Feedbanks
Depending on which column contains the Farm feed list as active, these buttons allow you to send all the feeds in the feedbank into the Farm. You would only be likely to use this option to send all the feeds from a regional list you have created to the Farm list as the other feedbanks are quite extensive.
Selecting one of these allows you to either select all of the Feedbanks to choose Farm feeds from or to clear the selection of active feedbanks available
Transfer All >>>
<<< Transfer All
Select All
Clear All

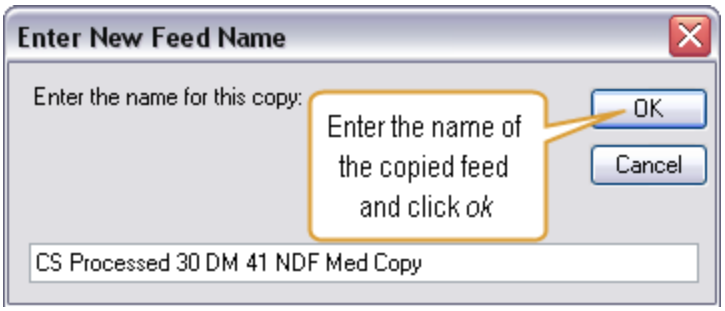


10.5.2 Copy Feed

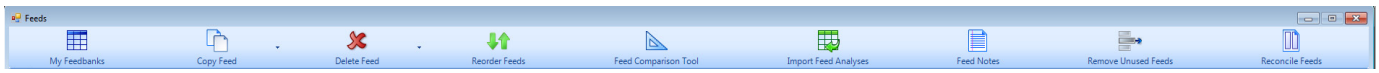
You can make duplicates of any of the feeds in your current feedbank. Clicking on this icon will bring up a list of your current feedbank feeds. Click on the feed you would like to copy. You will be prompted to enter a new name for the duplicate feed. You can now edit the new feed in the feedbank screen


Click the carrot to drop down the list of farm feeds available to copy
Copy Feed
Delete Feed
Alfalfa Silage 20 CP 40 NDF 17 LNDF
Grass Hay 10 CP 67 NDF 8 LNDF
Alfalfa Silage 20 CP 40 NDF 17 LNDFMRF
Rye Grass Silage 21 CP 50 NDF 7 LNDF

Highlighting the desired feed will bring up a dialog box in which the copied feed can be renamed.

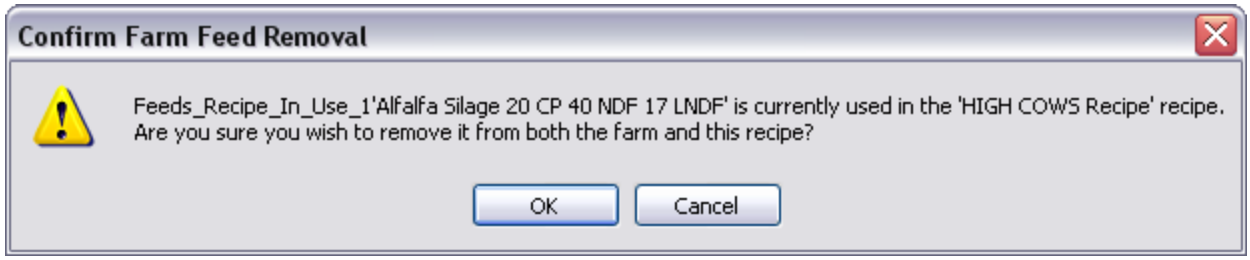

Enter New Feed Name
Enter the name for this copy:
Enter the name of the copied feed and click ok
OK
Cancel
CS Processed 30 DM 41 NDF Med Copy

Make feed names as short as possible. On your recipe screen the feed names dictate how much of the output screen you can see. The longest named feed sets the column width.



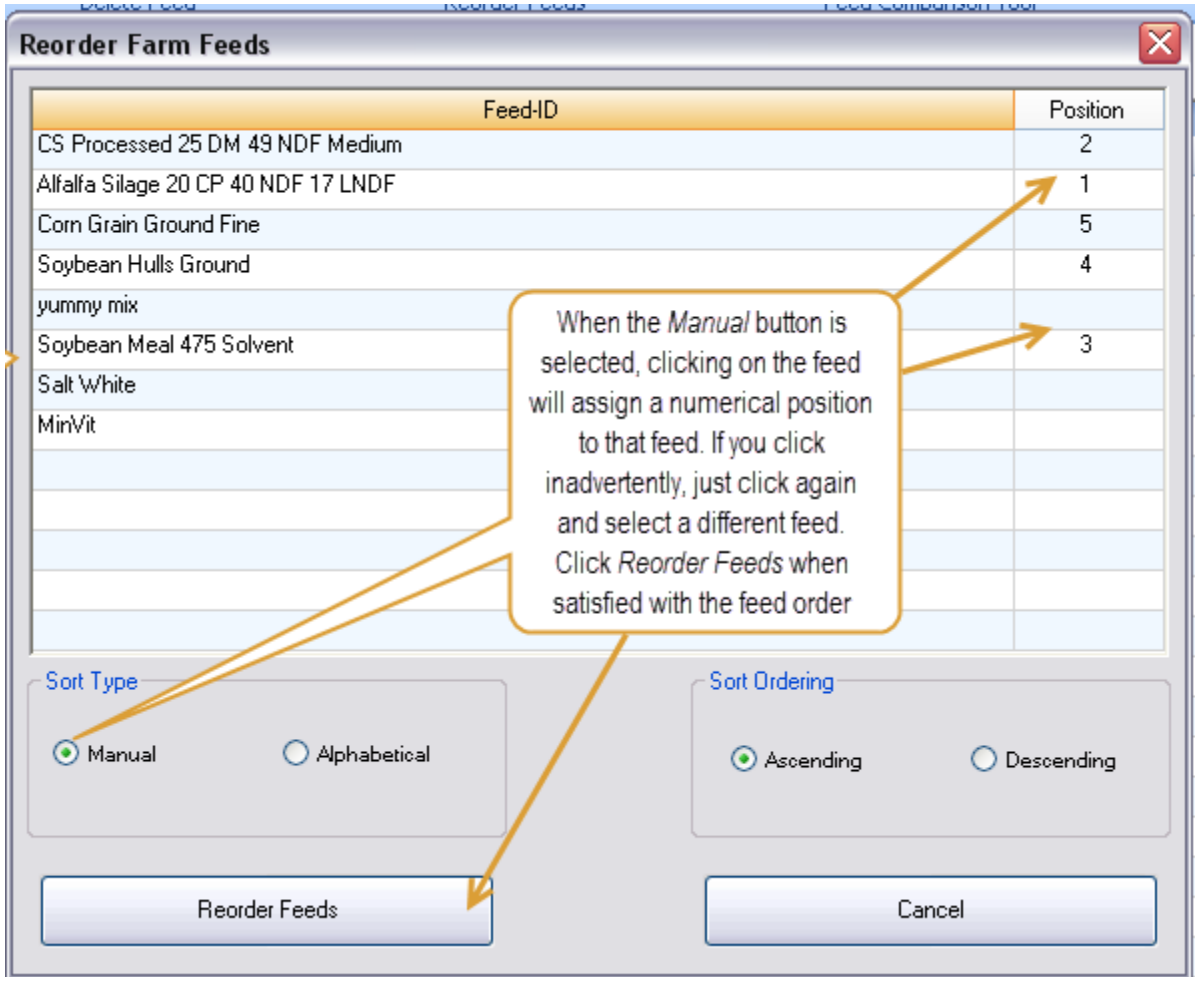
10.5.3 Delete Feed

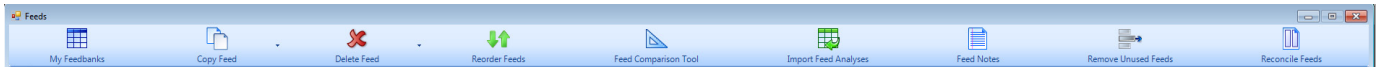
Clicking on this icon removes the feed from the selected farm file. You will get a warning message that the feed will be removed. If the feed is being used in a ration, you will also get a message warning you that the feed is used in a ration and which rations. If you choose to delete a feed that is used in a ration, the quantity of all the other feeds in that ration will be proportionally increased so the total amount of dry matter fed is the same as in the original ration. For example, if a ration has 3 feeds: 20 lbs corn silage, 30 lbs of haylage and 5 lbs corn grain (total = 55 lbs) and you delete the corn silage feed, the new ration will be 47.1 lbs haylage and 7.9 lbs corn grain. Be careful deleting feeds that are being used in rations.


Confirm Farm Feed Removal
Feeds_Recipe_In_Use_1'Alfalfa Silage 20 CP 40 NDF 17 LNDF' is currently used in the 'HIGH COWS Recipe' recipe.
Are you sure you wish to remove it from both the farm and this recipe?
OK
Cancel

10.5.4 Reorder Feeds

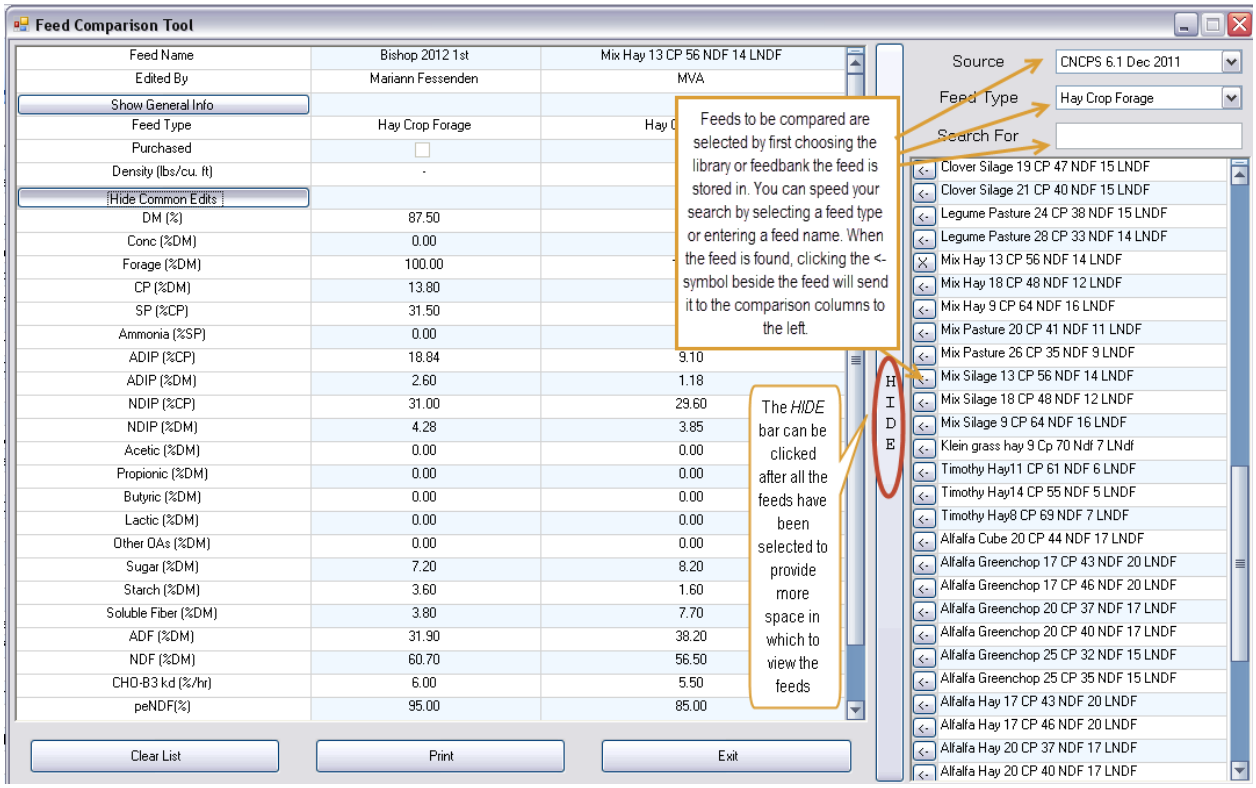
It is easy to change the order in which you view the feeds in the ration. Traditionally Rations read from forage to concentrates to minerals and additives. In selecting *Reorder Feeds* in the Feeds toolbar you will bring up the following dialog box in which you have several choices of how you wish to order the feeds.

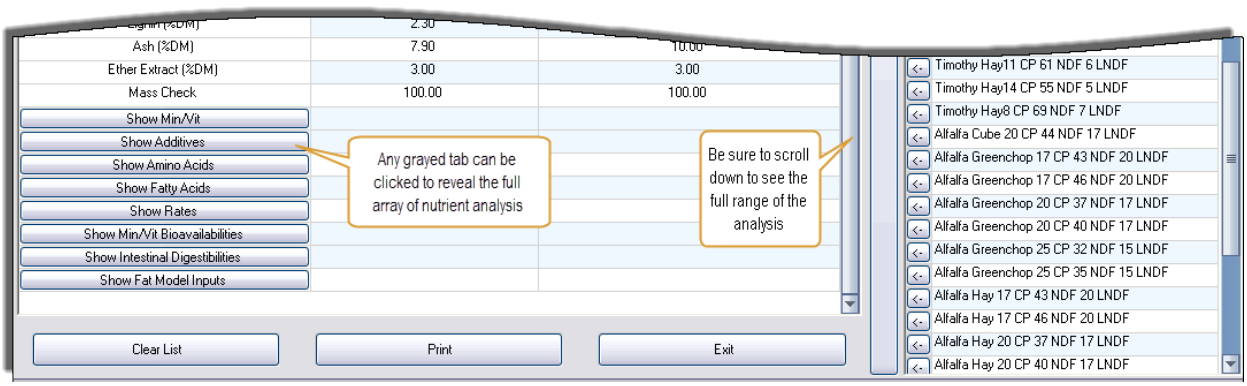

Reorder Farm Feeds
Feed-ID
Position
CS Processed 25 DM 49 NDF Medium 2
Alfalfa Silage 20 CP 40 NDF 17 LNDF 1
Corn Grain Ground Fine 5
Soybean Hulls Ground 4
yummy mix
Soybean Meal 475 Solvent 3
Salt White
MinVit
When the Manual button is selected, clicking on the feed will assign a numerical position to that feed. If you click inadvertently, just click again and select a different feed. Click Reorder Feeds when satisfied with the feed order
Sort Type
Manual
Alphabetical
Sort Ordering
Ascending
Descending
Reorder Feeds
Cancel



10.5.5 Feed Comparison Tool

This tool will allow you to compare the analysis for multiple feeds side by side. Select the feeds to compare on the right side of the screen. You can select the feeds from the AMTS feed library, any feed bank or the farm file.

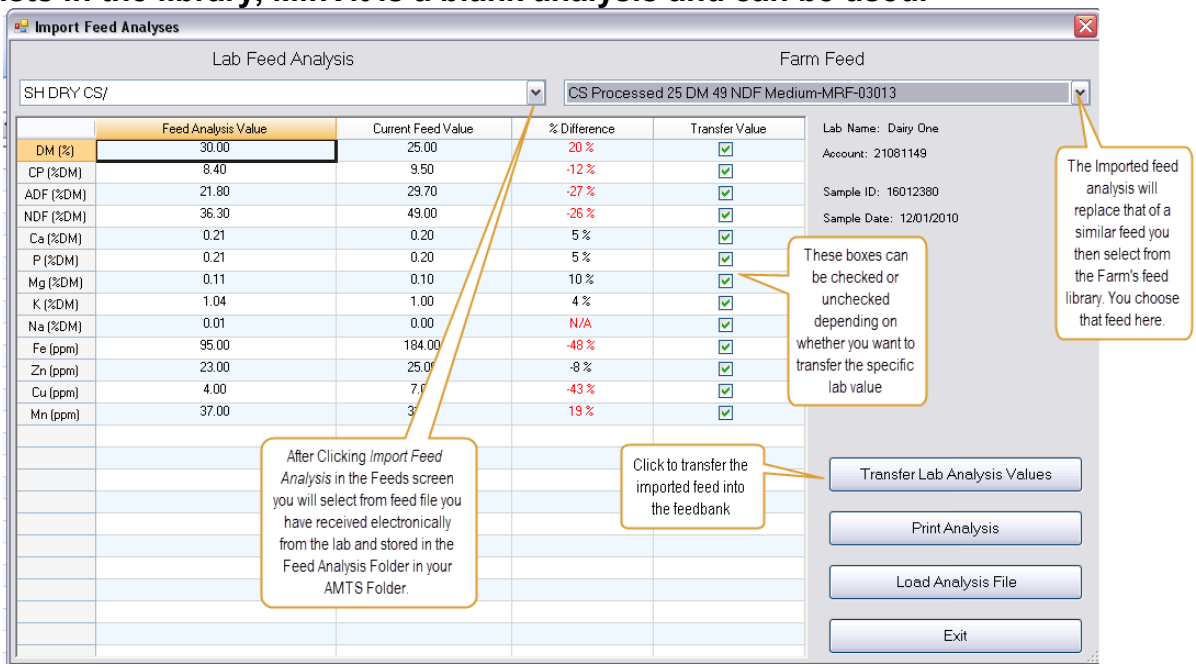

Feed Comparison Tool
Feed Name
Bishop 2012 1st
Mix Hay 13 CP 56 NDF 14 LNDF
Edited By
Mariann Fessenden
MVA
Show General Info
Feed Type
Hay Crop Forage
Purchased
Density (lbs/cu. ft)
Hide Common Edits
DM (%) 87.50
Conc (%DM) 0.00
Forage (%DM) 100.00
CP (%DM) 13.80
SP (%CP) 31.50
Ammonia (%SP) 0.00
ADIP (%CP) 18.84 9.10
ADIP (%DM) 2.60 1.18
NDIP (%CP) 31.00 29.60
NDIP (%DM) 4.28 3.85
Acetic (%DM) 0.00 0.00
Propionic (%DM) 0.00 0.00
Butyric (%DM) 0.00 0.00
Lactic (%DM) 0.00 0.00
Other OAs (%DM) 0.00 0.00
Sugar (%DM) 7.20 8.20
Starch (%DM) 3.60 1.60
Soluble Fiber (%DM) 3.80 7.70
ADF (%DM) 31.90 38.20
NDF (%DM) 60.70 56.50
CHO-B3 kd (%/hr) 6.00 5.50
peNDF(%) 95.00 85.00
Clear List
Print
Exit
Feeds to be compared are selected by first choosing the library or feedbank the feed is stored in. You can speed your search by selecting a feed type or entering a feed name. When the feed is found, clicking the <- symbol beside the feed will send it to the comparison columns to the left.
The HIDE bar can be clicked after all the feeds have been selected to provide more space in which to view the feeds
HIDE
Source
CNCPS 6.1 Dec 2011
Feed Type
Hay Crop Forage
Search For
Clover Silage 19 CP 47 NDF 15 LNDF
Clover Silage 21 CP 40 NDF 15 LNDF
Legume Pasture 24 CP 38 NDF 15 LNDF
Legume Pasture 28 CP 33 NDF 14 LNDF
Mix Hay 13 CP 56 NDF 14 LNDF
Mix Hay 18 CP 48 NDF 12 LNDF
Mix Hay 9 CP 64 NDF 16 LNDF
Mix Pasture 20 CP 41 NDF 11 LNDF
Mix Pasture 26 CP 35 NDF 9 LNDF
Mix Silage 13 CP 56 NDF 14 LNDF
Mix Silage 18 CP 48 NDF 12 LNDF
Mix Silage 9 CP 64 NDF 16 LNDF
Klein grass hay 9 Cp 70 Ndf 7 LNdf
Timothy Hay11 CP 61 NDF 6 LNDF
Timothy Hay14 CP 55 NDF 5 LNDF
Timothy Hay8 CP 69 NDF 7 LNDF
Alfalfa Cube 20 CP 44 NDF 17 LNDF
Alfalfa Greenchop 17 CP 43 NDF 20 LNDF
Alfalfa Greenchop 17 CP 46 NDF 20 LNDF
Alfalfa Greenchop 20 CP 37 NDF 17 LNDF
Alfalfa Greenchop 20 CP 40 NDF 17 LNDF
Alfalfa Greenchop 25 CP 32 NDF 15 LNDF
Alfalfa Greenchop 25 CP 35 NDF 15 LNDF
Alfalfa Hay 17 CP 43 NDF 20 LNDF
Alfalfa Hay 17 CP 46 NDF 20 LNDF
Alfalfa Hay 20 CP 37 NDF 17 LNDF
Alfalfa Hay 20 CP 40 NDF 17 LNDF


Ash (%DM) 7.90 10.00
Ether Extract (%DM) 3.00 3.00
Mass Check 100.00 100.00
Show Min/Vit
Show Additives
Show Amino Acids
Show Fatty Acids
Show Rates
Show Min/Vit Bioavailabilities
Show Intestinal Digestibilities
Show Fat Model Inputs
Clear List
Print
Exit
Any grayed tab can be clicked to reveal the full array of nutrient analysis
Be sure to scroll down to see the full range of the analysis
Timothy Hay11 CP 61 NDF 6 LNDF
Timothy Hay14 CP 55 NDF 5 LNDF
Timothy Hay8 CP 69 NDF 7 LNDF
Alfalfa Cube 20 CP 44 NDF 17 LNDF
Alfalfa Greenchop 17 CP 43 NDF 20 LNDF
Alfalfa Greenchop 17 CP 46 NDF 20 LNDF
Alfalfa Greenchop 20 CP 37 NDF 17 LNDF
Alfalfa Greenchop 20 CP 40 NDF 17 LNDF
Alfalfa Greenchop 25 CP 32 NDF 15 LNDF
Alfalfa Greenchop 25 CP 35 NDF 15 LNDF
Alfalfa Hay 17 CP 43 NDF 20 LNDF
Alfalfa Hay 17 CP 46 NDF 20 LNDF
Alfalfa Hay 20 CP 37 NDF 17 LNDF
Alfalfa Hay 20 CP 40 NDF 17 LNDF

10.5.6 Import Feed Analyses

You can import feed analysis electronically using the AMTS XML format implemented at several labs. Simply click on Tools, Import Feed Analyses. Find the file you received from the lab (typically with an .amts_fa extension). Select the feed from the lab file, and match it with a feed from the farm file.

NOTE: The feed must exist in the farm file to import analysis. If the feed does not exist in the farm file, import a similar feed into the farm file before starting the Import. **If no similar feed exists in the library, MinVit is a blank analysis and can be used.**


Import Feed Analyses
Lab Feed Analysis
Farm Feed
SH DRY CS/
CS Processed 25 DM 49 NDF Medium-MRF-03013
Feed Analysis Value
Current Feed Value
% Difference
Transfer Value
DM (%) 30.00 25.00 20 %
CP (%DM) 8.40 9.50 -12 %
ADF (%DM) 21.80 29.70 -27 %
NDF (%DM) 36.30 49.00 -26 %
Ca (%DM) 0.21 0.20 5 %
P (%DM) 0.21 0.20 5 %
Mg (%DM) 0.11 0.10 10 %
K (%DM) 1.04 1.00 4 %
Na (%DM) 0.01 0.00 N/A
Fe (ppm) 95.00 184.00 -48 %
Zn (ppm) 23.00 25.0 -8 %
Cu (ppm) 4.00 7.0 -43 %
Mn (ppm) 37.00 3 19 %
Lab Name: Dairy One
Account: 21081149
Sample ID: 16012380
Sample Date: 12/01/2010
The Imported feed analysis will replace that of a similar feed you then select from the Farm's feed library. You choose that feed here.
These boxes can be checked or unchecked depending on whether you want to transfer the specific lab value
After Clicking Import Feed Analysis in the Feeds screen you will select from feed file you have received electronically from the lab and stored in the Feed Analysis Folder in your AMTS Folder.
Click to transfer the imported feed into the feedbank
Transfer Lab Analysis Values
Print Analysis
Load Analysis File
Exit

The screen shows the feed analysis value from the lab and the current farm file feed values and the difference between them. A difference greater than 10% will show in red.

10.5.6.1 Import CPM files

The **CPM** Import Function is intended to allow **AMTS.Cattle** (all versions) users to quickly convert **CPM** files into **AMTS** files.

The **CPM** user should be aware that their predicted results will be different in **AMTS.Cattle**. **CPM ver. 3** is based on the **CNCPS ver. 5.5** biological model. There are differences in several inputs, namely the additional carbohydrate pools utilized by **ver. 6** biology and changes in protein A and B1 pool sizes and kd values. To make the conversion seamless, **AMTS** automatically selects a feed of the correct feed type and assigns the updated pool sizes

and kd values to the imported **CPM** feeds. Additionally, changes in the core biological model calculations, as well as how mixes (composites) are handled internally result in prediction differences. Model users must remember that a good model is evolutionary and as updated/new biology is modeled, prediction differences do (and will continue) to change. The goal of updated biological models is to more accurately predict field responses.

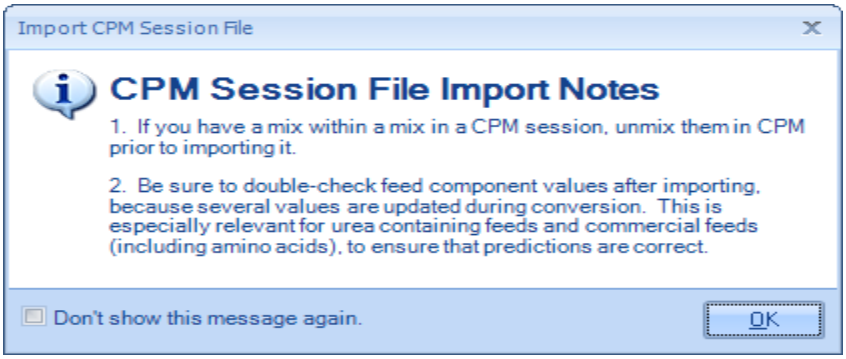
Using the CPM Import Function

Step 1. If you have any mixes within mixes in **CPM**. Go into **CPM** and un-mix them. Also if you have water as an ingredient in your **ssn** file take it out for now then you can add it back into the diet after it's in **AMTS** (**CPM** uses 0 dry matter and **AMTS** can't handle a feed like that)

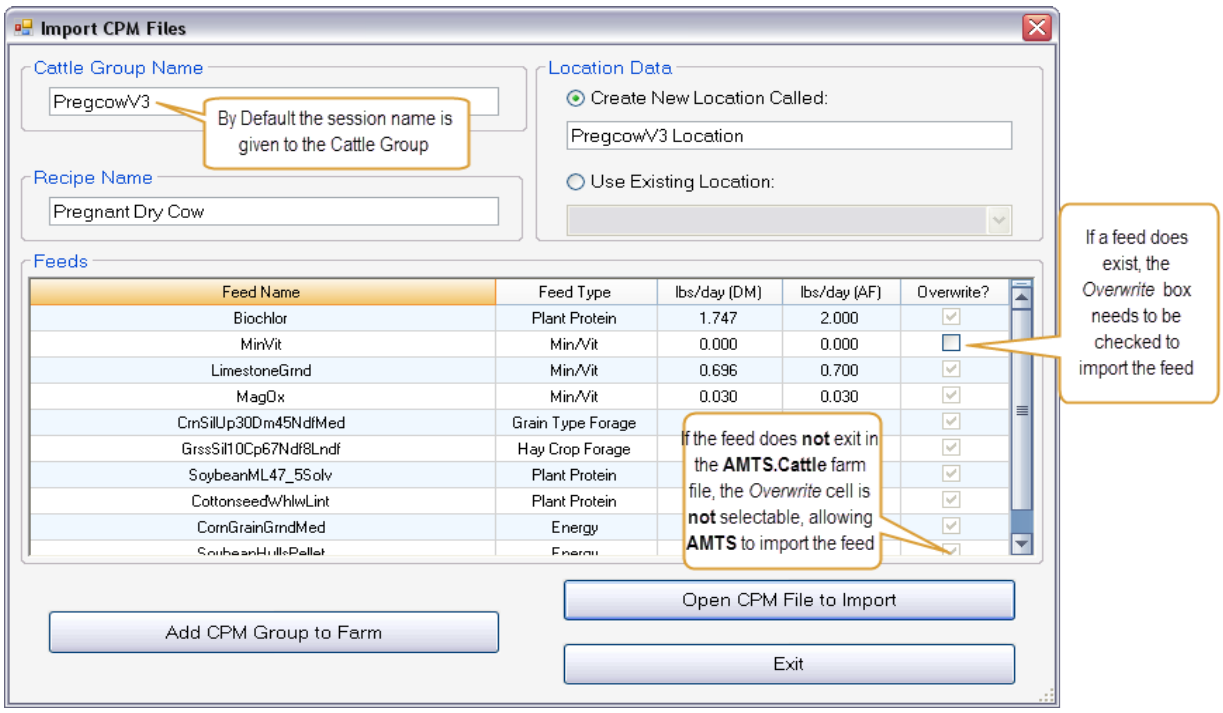
TAKE THE DASH OUT: To ensure data integrity, if a **CPM** feed has a dash (-) in the name, we recommend changing the **CPM** name to either remove the dash or replace it with an underscore (_). Dashes are used with **AMTS** software as part of the feed naming done automatically internally.

Step 2. If this is the first **CPM** file from a farm being imported, create a new farm in **AMTS.Cattle** (all versions). If you are importing a **CPM** file into an existing farm, open that farm file.

Step 3. Once the farm is created/opened, click on Tools, Import CPM Session File. This dialog box will appear


Import CPM Session File
CPM Session File Import Notes
1. If you have a mix within a mix in a CPM session, unmix them in CPM prior to importing it.
2. Be sure to double-check feed component values after importing, because several values are updated during conversion. This is especially relevant for urea containing feeds and commercial feeds (including amino acids), to ensure that predictions are correct.
Don't show this message again.
OK

Step 4. The Import **CPM** Session dialog box opens. Browse to find the CPM Session file you wish to import. When found, click on it. Click on *Open*, you will see:



If a feed does NOT exist in the **AMTS.Cattle** farm file, the Overwrite cell is NOT selectable and is checked. This allows **AMTS.Cattle** to import the feed.

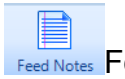
If a feed does exist (has the exact same Feed Name, the Overwrite checkbox is NOT checked by default.

- If not checked, a second copy of the feed will be added to the farm file
- If you click on the Overwrite checkbox (set it to checked), the imported feed will overwrite the existing data in **AMTS.Dairy**. This is useful if you are importing several **CPM** sessions representing one farm. For example, you may have 5 **CPM** session files for a farm (different groups) that all use the same corn silage. By overwriting, you can be sure you are using the most recent analysis for that corn silage.

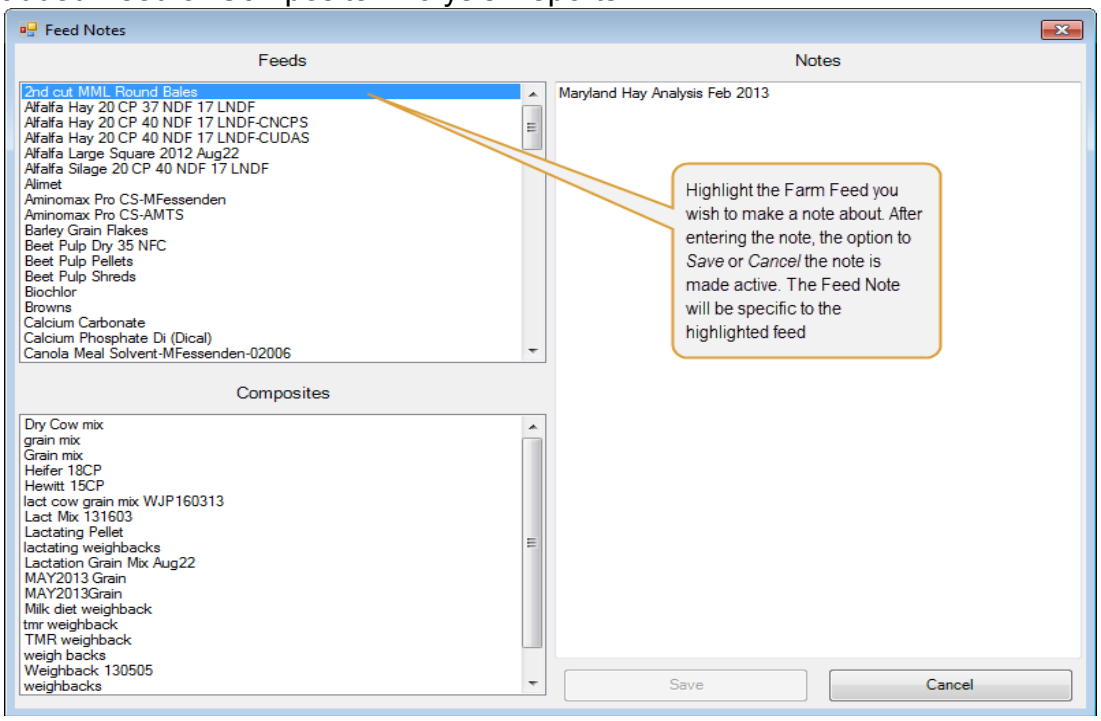
Step 6. Click on the *Add **CPM** Group to Farm* button. A message box will appear stating that import is complete. At this point, you can either import another session file by clicking on *Open CPM File to Import* button or *Exit* this screen and evaluate the ration using **AMTS.Dairy**

Tip: It is important that you double check your values in the new feedbank in .Cattle.Professional as changes in the biology may require some adjustments to rates, intestinal digestibility, and pools to recalibrate your data with 6.1 biology. Questions regarding this should be directed to: tom@agmodelsystems.com.

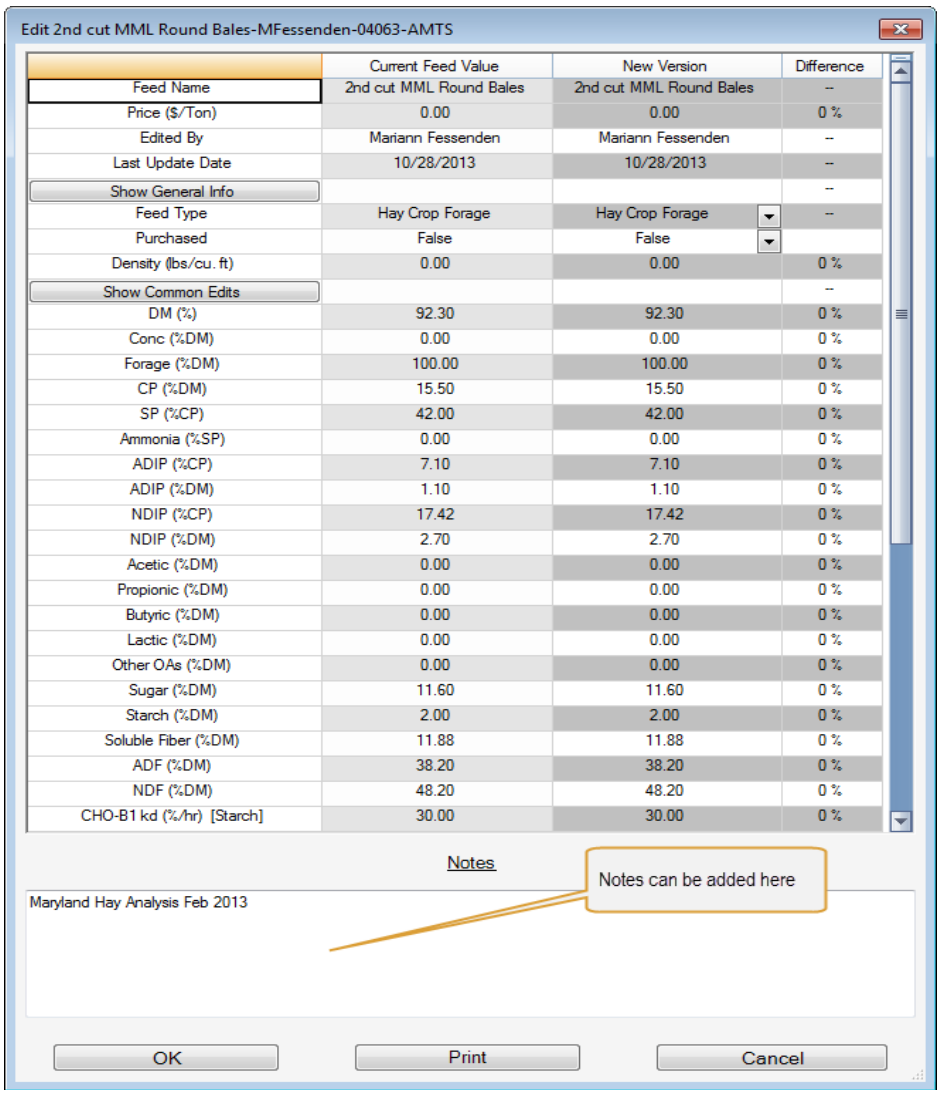
10.5.7 Feed Notes



Feed Notes can be added to each feed in the Farm Feedbank from either the **Feed Notes** window, in the **Edit Feed** Dialog box, or in the **Composite** Screen. The notes can be added Feed or Composite Analysis Reports.

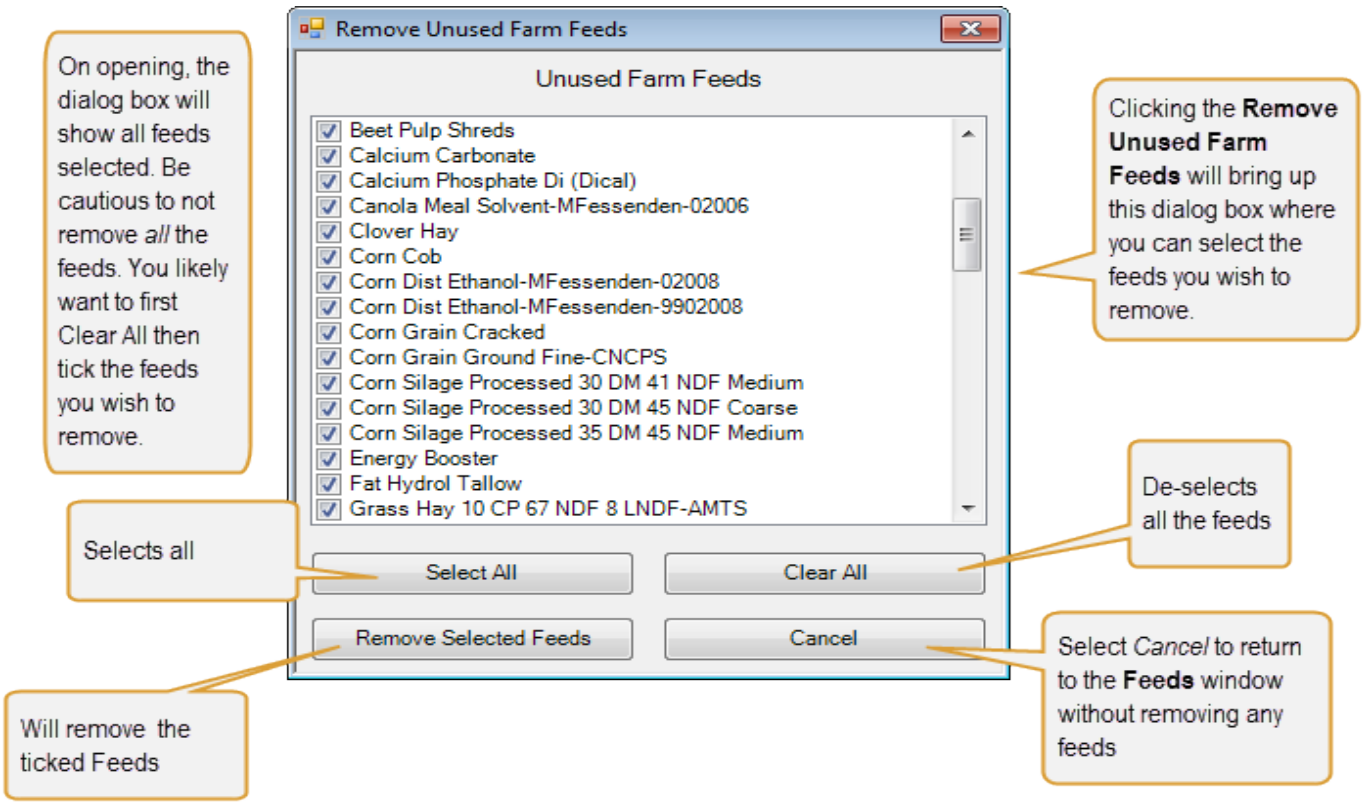


In the **Edit Feed** dialog box



10.5.8 Remove Unused Feeds

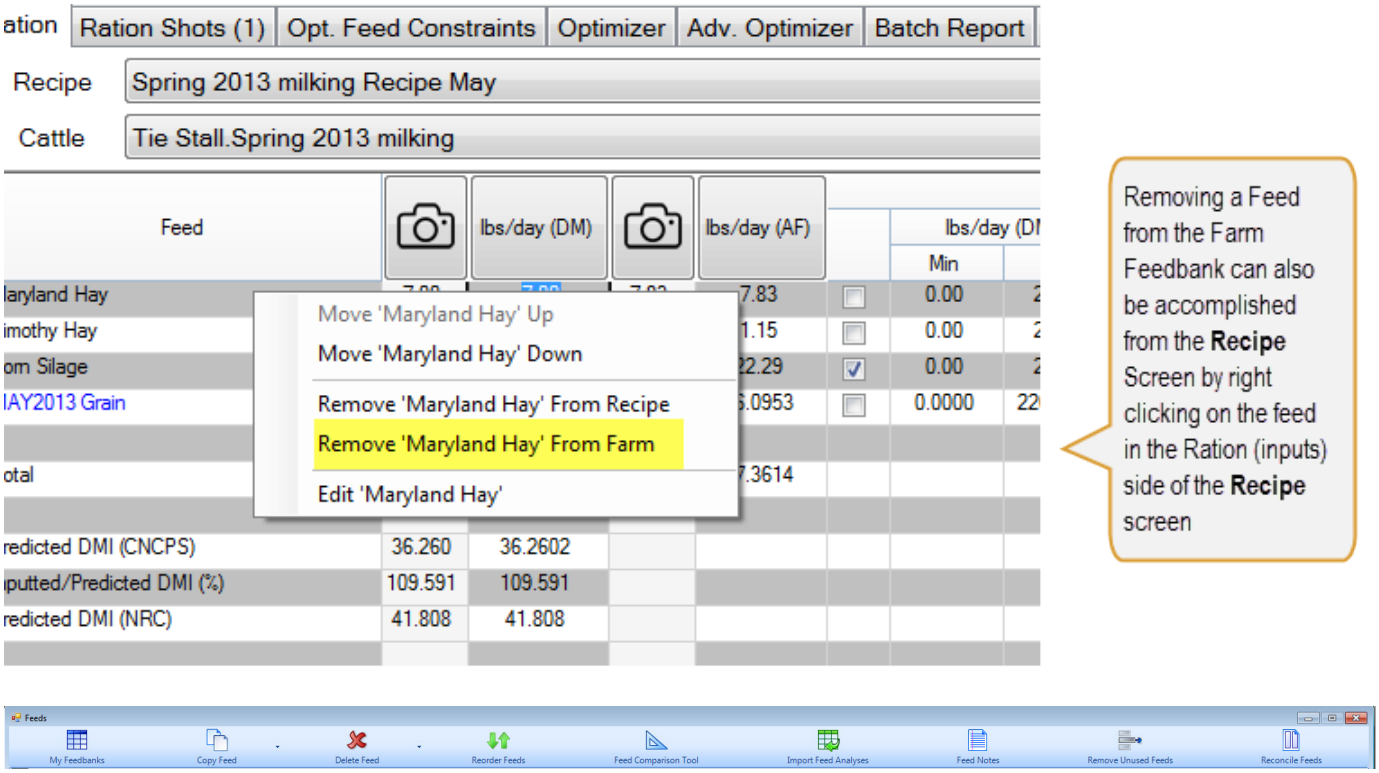
This option can be used to clear the Farm Feedbank of feeds no longer used in any recipes. Farm Feed lists can get long if many ingredients are used or .Pro has been used for a number of years. This option allows for Farm Feed removal both in the **Feeds** window or the **Recipe** window.


On opening, the dialog box will show all feeds selected. Be cautious to not remove *all* the feeds. You likely want to first Clear All then tick the feeds you wish to remove.
Remove Unused Farm Feeds
Unused Farm Feeds
Beet Pulp Shreds
Calcium Carbonate
Calcium Phosphate Di (Dical)
Canola Meal Solvent-MFessenden-02006
Clover Hay
Corn Cob
Corn Dist Ethanol-MFessenden-02008
Corn Dist Ethanol-MFessenden-9902008
Corn Grain Cracked
Corn Grain Ground Fine-CNCPS
Corn Silage Processed 30 DM 41 NDF Medium
Corn Silage Processed 30 DM 45 NDF Coarse
Corn Silage Processed 35 DM 45 NDF Medium
Energy Booster
Fat Hydrol Tallow
Grass Hay 10 CP 67 NDF 8 LNDF-AMTS
Clicking the **Remove Unused Farm Feeds** will bring up this dialog box where you can select the feeds you wish to remove.
Selects all
Select All
Clear All
De-selects all the feeds
Remove Selected Feeds
Cancel
Will remove the ticked Feeds
Select *Cancel* to return to the **Feeds** window without removing any feeds

Note: Removing a Feed from the Farm Feedbank is permanent.

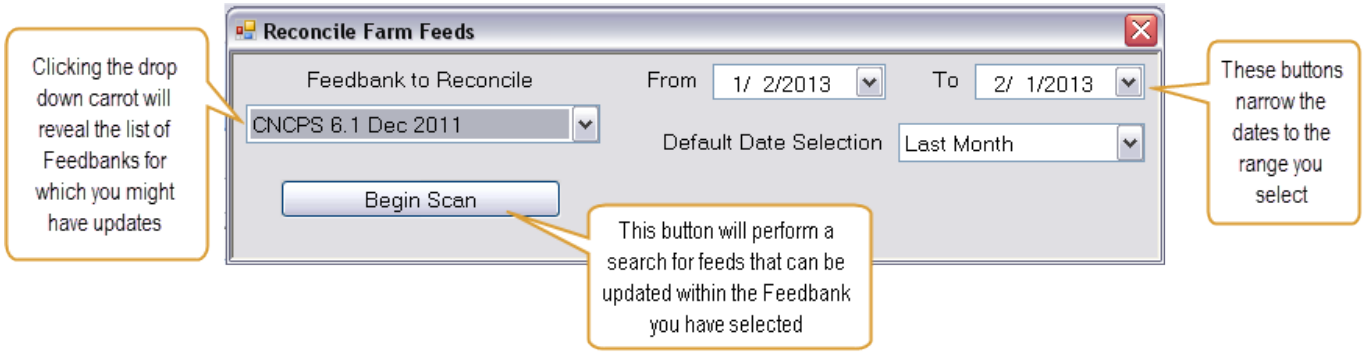
Remove Selected Feeds From Farm?
This action will permanently delete the selected feeds from the farm.
Do you wish to continue?
OK
Cancel
When you do select a feed to remove, you will receive this notice, to ensure this is an action you want to take.

Removing the Feed from the Farm Feedbank can also be performed in the Recipe Screen.



10.4.9 Reconcile Feeds

Clicking on the Reconcile Feeds icon will update the farm feed prices and composition from available feedbanks that have identical names. This was developed especially for use with **AMTS Feed Bank Manager** but is also very useful if a feed company regularly sends out updated analysis and pricing information.

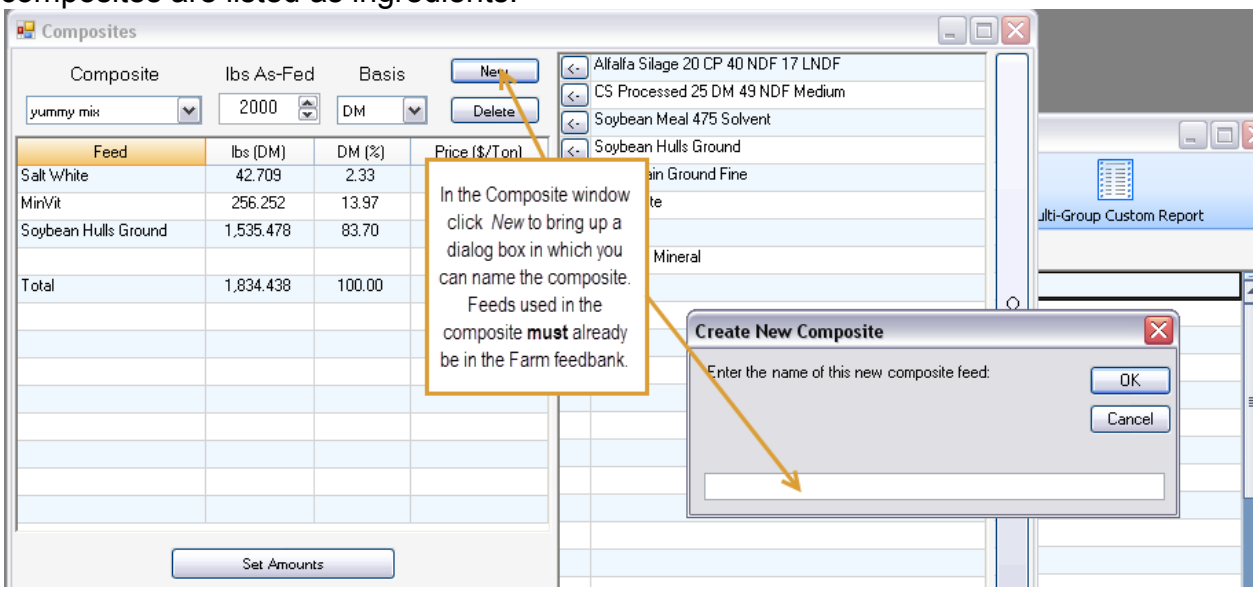

Clicking the drop down carrot will reveal the list of Feedbanks for which you might have updates
Reconcile Farm Feeds
Feedbank to Reconcile
CNCPS 6.1 Dec 2011
From
1/ 2/2013
To
2/ 1/2013
Default Date Selection
Last Month
Begin Scan
These buttons narrow the dates to the range you select
This button will perform a search for feeds that can be updated within the Feedbank you have selected

After selecting the Feed Bank and Date Range, ticking the *Begin Scan* tab to generate a list of Feeds available to reconcile. This allows you to evaluate the analysis or price as they are currently, then reconcile and see the changes.

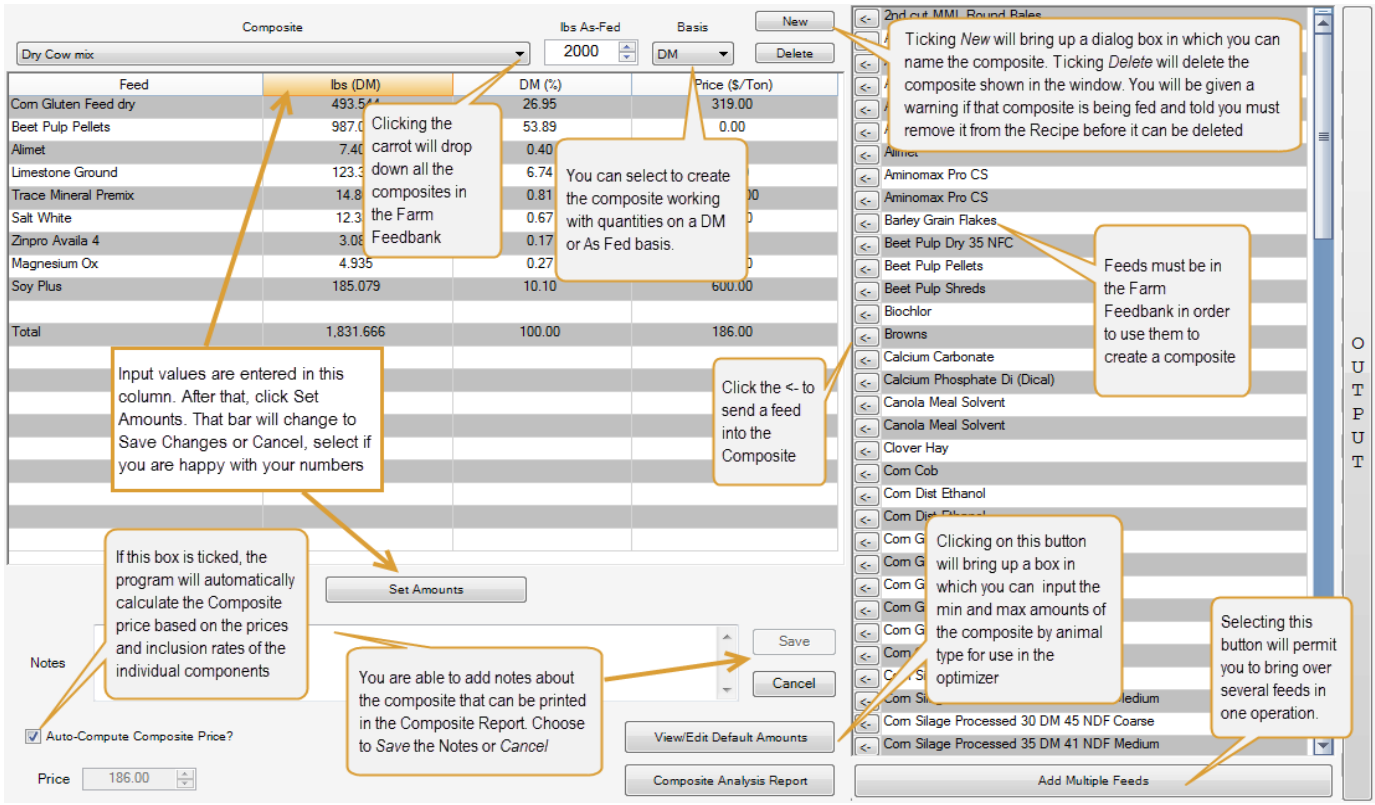
When you run Reconcile Farm Feeds, especially if it is done infrequently, open up the date range to ensure to catch all the changes.

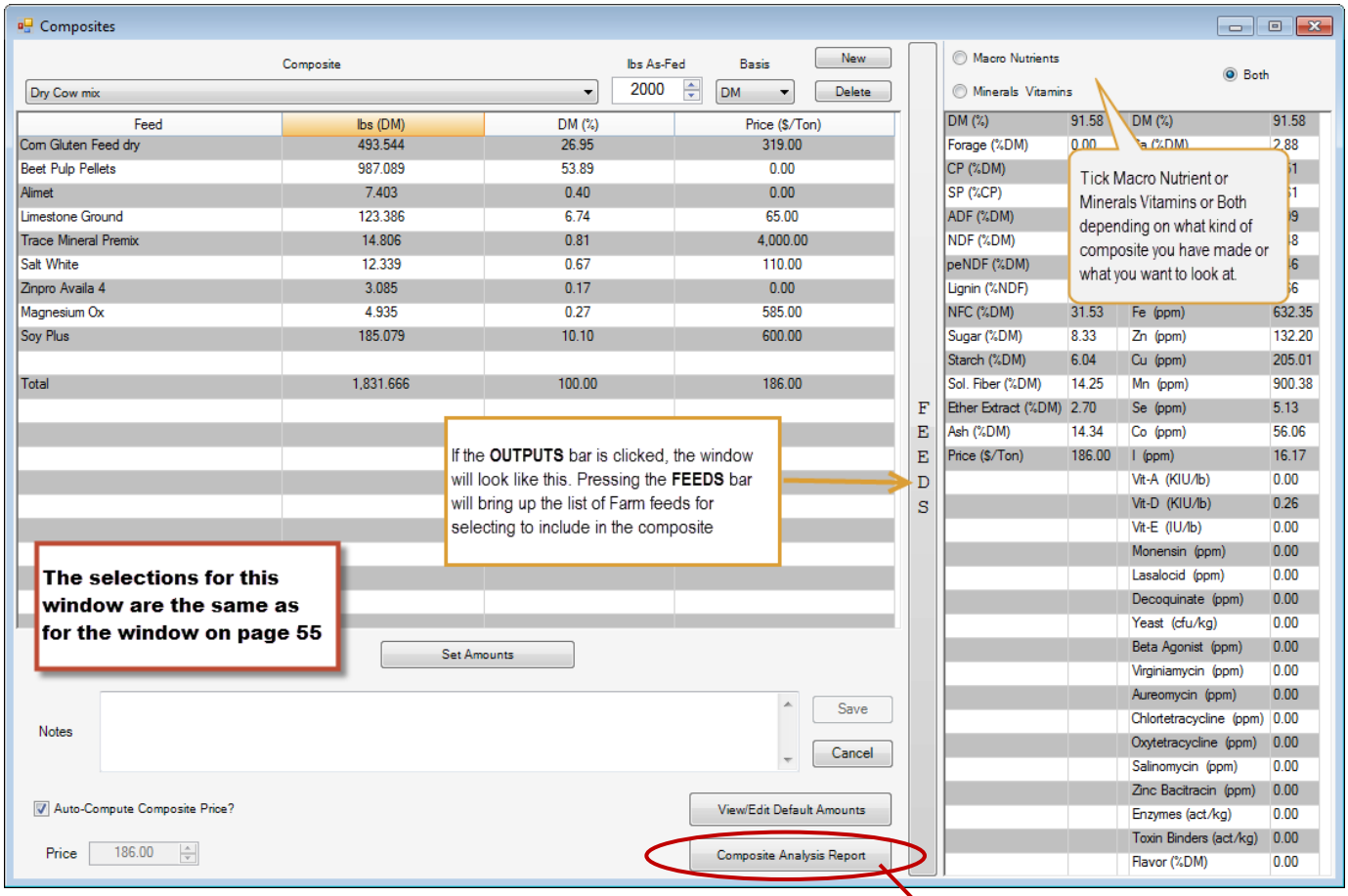
11.0 Composites

On this screen you create, delete, and modify composites. To create or modify a composite, the feeds you wish to add to the composite must be in the farm file. If more than one composite exists in the file, you will notice that at the very end of the Farm Feeds, the other composites are listed as ingredients.

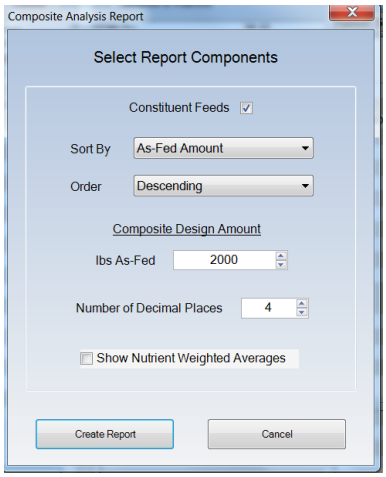


Note: you can only input mass amounts. Thus, to input percentages, input either DM or As-Fed amounts as if mass equaled percentage. i.e. set the Set Amounts value to 100 then input values in the lbs column as the percentage numbers


Composite
Ibs As-Fed
Basis
New
Delete
Dry Cow mix
2000
DM
Feed
lbs (DM)
DM (%)
Price ($/Ton)
Com Gluten Feed dry 26.95 319.00
Beet Pulp Pellets 53.89 0.00
Alimet 0.40
Limestone Ground 6.74
Trace Mineral Premix 0.81
Salt White 0.67
Zinpro Availa 4 0.17
Magnesium Ox 4.935 0.27
Soy Plus 185.079 10.10 600.00
Total 1,831.666 100.00 186.00
Clicking the carrot will drop down all the composites in the Farm Feedbank
You can select to create the composite working with quantities on a DM or As Fed basis.
Ticking New will bring up a dialog box in which you can name the composite. Ticking Delete will delete the composite shown in the window. You will be given a warning if that composite is being fed and told you must remove it from the Recipe before it can be deleted
Input values are entered in this column. After that, click Set Amounts. That bar will change to Save Changes or Cancel, select if you are happy with your numbers
Click the <- to send a feed into the Composite
Feeds must be in the Farm Feedbank in order to use them to create a composite
Set Amounts
If this box is ticked, the program will automatically calculate the Composite price based on the prices and inclusion rates of the individual components
Notes
Save
Cancel
You are able to add notes about the composite that can be printed in the Composite Report. Choose to Save the Notes or Cancel
Auto-Compute Composite Price?
Price
186.00
View/Edit Default Amounts
Composite Analysis Report
Aminomax Pro CS
Aminomax Pro CS
Barley Grain Flakes
Beet Pulp Dry 35 NFC
Beet Pulp Pellets
Beet Pulp Shreds
Biochlor
Browns
Calcium Carbonate
Calcium Phosphate Di (Dical)
Canola Meal Solvent
Canola Meal Solvent
Clover Hay
Corn Cob
Corn Dist Ethanol
Clicking on this button will bring up a box in which you can input the min and max amounts of the composite by animal type for use in the optimizer
Com Silage Processed 30 DM 45 NDF Coarse
Com Silage Processed 35 DM 41 NDF Medium
Add Multiple Feeds
Selecting this button will permit you to bring over several feeds in one operation.
OUTPUT


Composites
Composite
Dry Cow mix
lbs As-Fed
2000
Basis
DM
New
Delete
Feed | lbs (DM) | DM (%) | Price ($/Ton)
Corn Gluten Feed dry | 493.544 | 26.95 | 319.00
Beet Pulp Pellets | 987.089 | 53.89 | 0.00
Alimet | 7.403 | 0.40 | 0.00
Limestone Ground | 123.386 | 6.74 | 65.00
Trace Mineral Premix | 14.806 | 0.81 | 4,000.00
Salt White | 12.339 | 0.67 | 110.00
Zinpro Availa 4 | 3.085 | 0.17 | 0.00
Magnesium Ox | 4.935 | 0.27 | 585.00
Soy Plus | 185.079 | 10.10 | 600.00
Total | 1,831.666 | 100.00 | 186.00
If the OUTPUTS bar is clicked, the window will look like this. Pressing the FEEDS bar will bring up the list of Farm feeds for selecting to include in the composite
The selections for this window are the same as for the window on page 55
Set Amounts
Notes
Save
Cancel
Auto-Compute Composite Price?
Price
186.00
View/Edit Default Amounts
Composite Analysis Report
F E E D S
Macro Nutrients
Minerals Vitamins
Both
Tick Macro Nutrient or Minerals Vitamins or Both depending on what kind of composite you have made or what you want to look at.
DM (%) 91.58
Forage (%DM) 0.00
CP (%DM)
SP (%CP)
ADF (%DM)
NDF (%DM)
peNDF (%DM)
Lignin (%NDF)
NFC (%DM) 31.53
Sugar (%DM) 8.33
Starch (%DM) 6.04
Sol. Fiber (%DM) 14.25
Ether Extract (%DM) 2.70
Ash (%DM) 14.34
Price ($/Ton) 186.00
DM (%) 91.58
Fe (ppm) 632.35
Zn (ppm) 132.20
Cu (ppm) 205.01
Mn (ppm) 900.38
Se (ppm) 5.13
Co (ppm) 56.06
I (ppm) 16.17
Vit-A (KIU/lb) 0.00
Vit-D (KIU/lb) 0.26
Vit-E (IU/lb) 0.00
Monensin (ppm) 0.00
Lasalocid (ppm) 0.00
Decoquinate (ppm) 0.00
Yeast (cfu/kg) 0.00
Beta Agonist (ppm) 0.00
Virginiamycin (ppm) 0.00
Aureomycin (ppm) 0.00
Chlortetracycline (ppm) 0.00
Oxytetracycline (ppm) 0.00
Salinomycin (ppm) 0.00
Zinc Bacitracin (ppm) 0.00
Enzymes (act/kg) 0.00
Toxin Binders (act/kg) 0.00
Flavor (%DM) 0.00

The **Composite Analysis Report** button prints a report to send to a mill. This report can be printed or saved as a file (c1dx, pdf, xlsx, xls, docx, htm, emf). When the "Constituent Feeds" box is check, the list of feeds in the composite appears on the report. When the "Show Nutrient Weighted Averages" box is checked, the weighted average nutrient analysis of the composite is shown on the report.



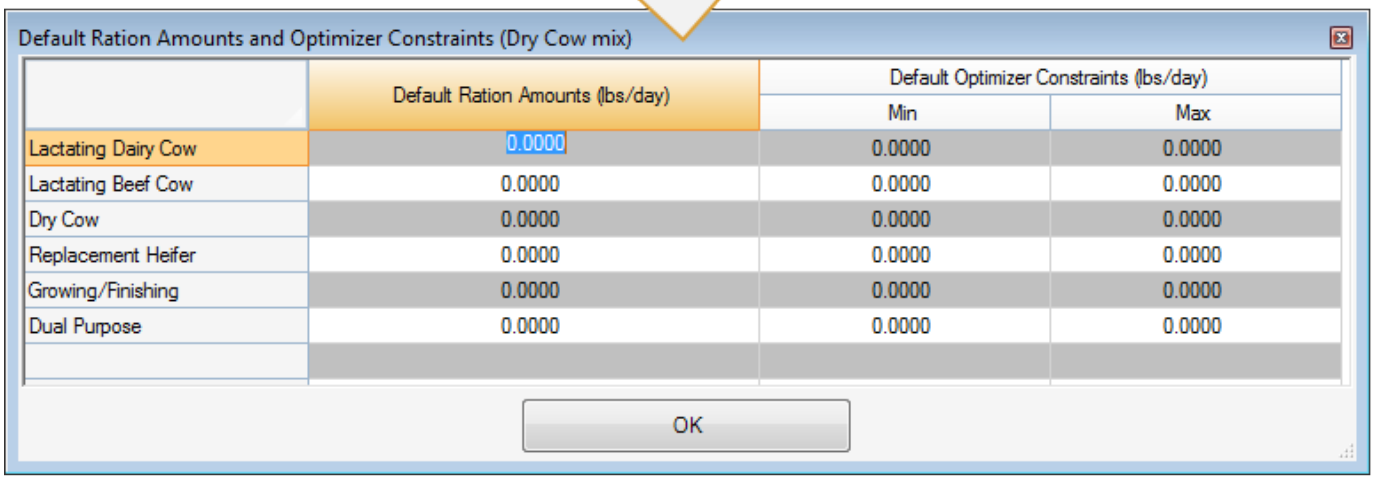
Composite Analysis Report (Mineral Mix)

Whosville Holsteins **12/5/2010**

Feed	lbs (DM)	lbs (AF)	DM (%)	AF (%)
Mineral Premix 2:1	1093.4060	1098.9010	54.95	54.95
Sodium Bicarbonate	546.7034	549.4506	27.47	27.47
Salt White	349.8902	351.6484	17.58	17.58
Total	1990.0000	2000.0000	100.00	100.00

DM (%)	99.50	Fe (ppm)	1373.63	Monensin (ppm)	0.00
CP (%DM)	0.00	Zn (ppm)	3846.15	Lasalocid (ppm)	0.00
NDF (%DM)	0.00	Cu (ppm)	549.45	Decoquinate (ppm)	0.00
EE (%DM)	0.00	Mn (ppm)	2746.70	Yeast (cfu/kg)	0.00
Ash (%DM)	100.00	Se (ppm)	13.74	Beta Agonist (ppm)	0.00
SP (%DM)	0.00	Co (ppm)	54.95	Virginiamycin (ppm)	0.00
Lignin (%NDF)	0.00	I (ppm)	54.95	Aureomycin (ppm)	0.00
Ca (%DM)	10.99	Vit-A (KIU/lb)	164.84	Chlortetracycline (ppm)	0.00
P (%DM)	5.49	Vit-D (KIU/lb)	27.47	Oxytetracycline (ppm)	0.00
Mg (%DM)	2.75	Vit-E (IU/lb)	659.34	Salinomycin (ppm)	0.00
K (%DM)	0.55			Zinc Bacitracin (ppm)	0.00
S (%DM)	1.65			Enzymes (act/kg)	0.00
Na (%DM)	14.33			Toxin Binders (act/kg)	0.00
Cl (%DM)	10.67			Flavor (%DM)	0.00

If the *View/Edit Default Amounts* button is ticked on the Composite window, this dialog box will be generated. Here you can set the default ration amounts and the optimizer constraints by directly inputting weights for each animal type.

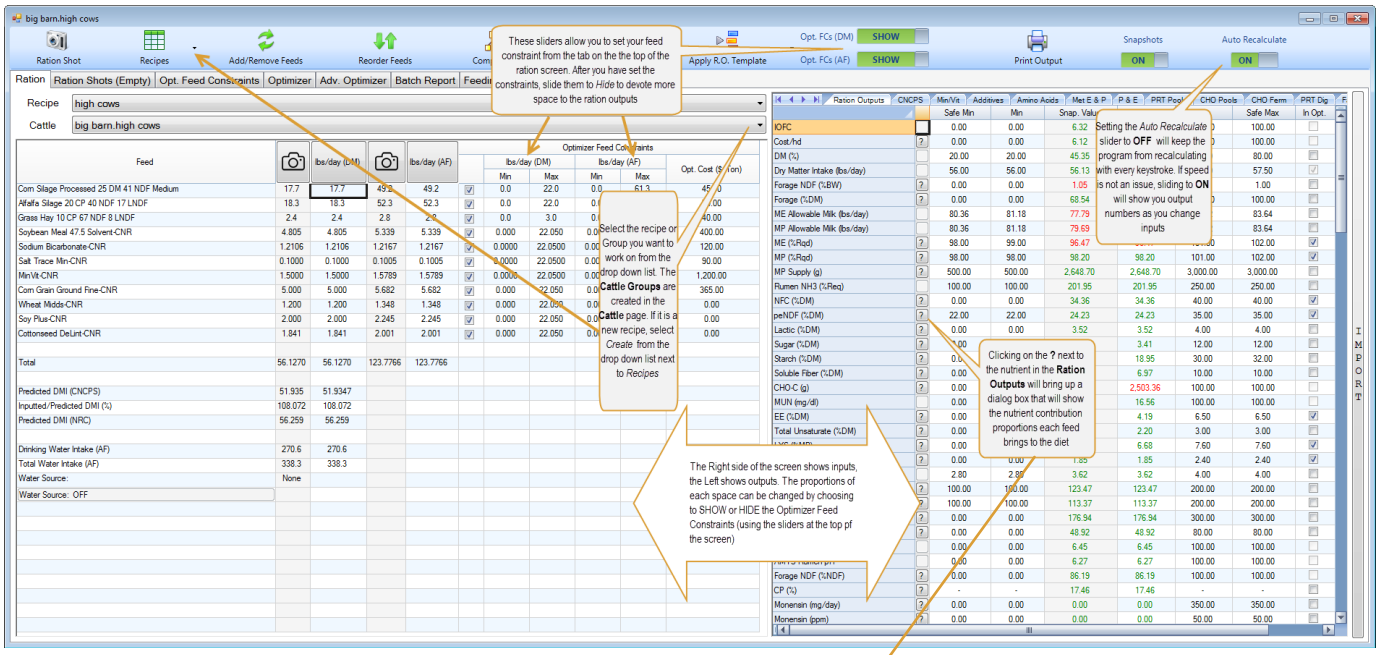

Default Ration Amounts and Optimizer Constraints (Dry Cow mix)
Default Ration Amounts (lbs/day)
Default Optimizer Constraints (lbs/day)
Min
Max
Lactating Dairy Cow 0.0000 0.0000 0.0000
Lactating Beef Cow 0.0000 0.0000 0.0000
Dry Cow 0.0000 0.0000 0.0000
Replacement Heifer 0.0000 0.0000 0.0000
Growing/Finishing 0.0000 0.0000 0.0000
Dual Purpose 0.0000 0.0000 0.0000
OK

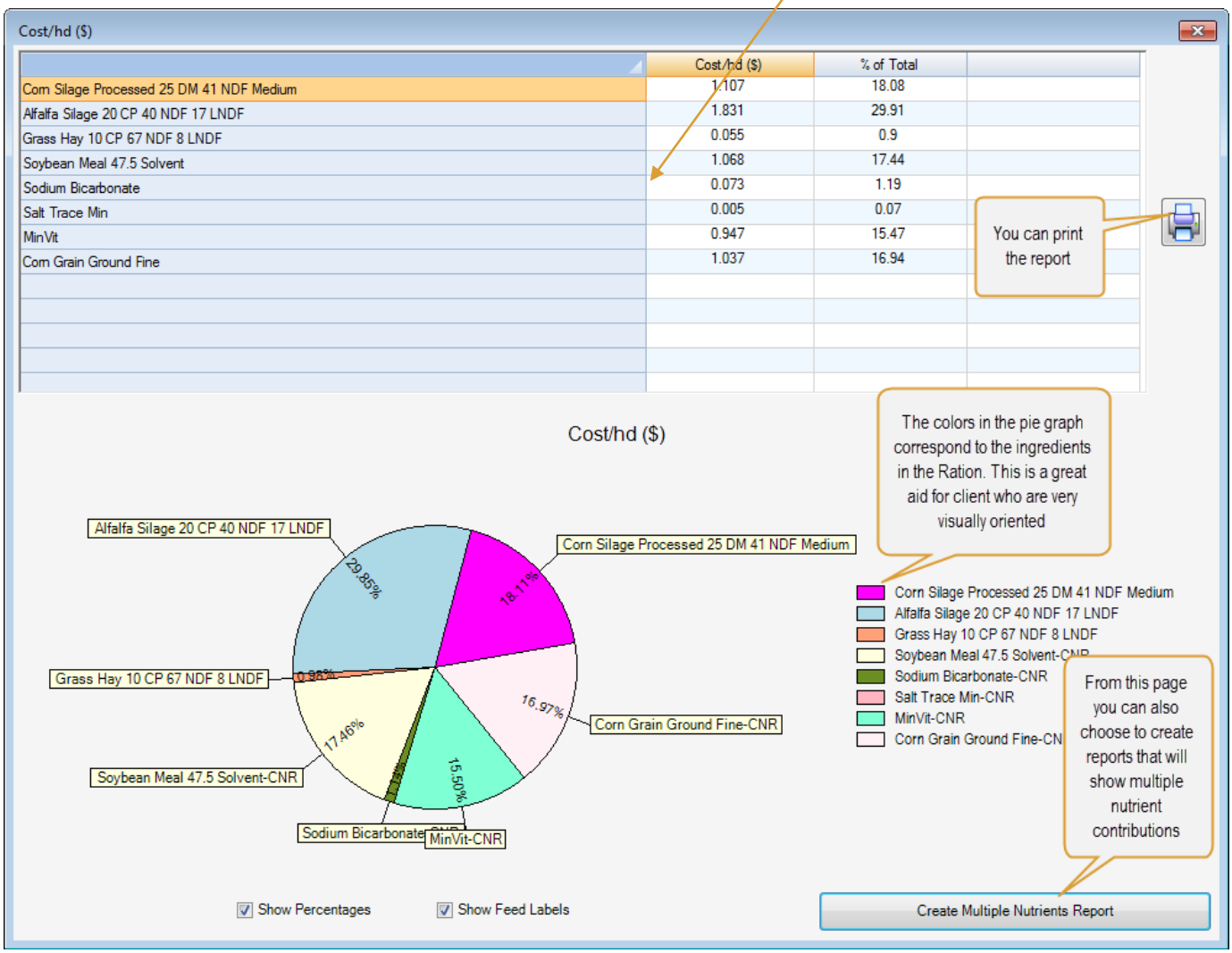
Tip: You can also get a composite analysis report in the feed screen by right clicking the composite.

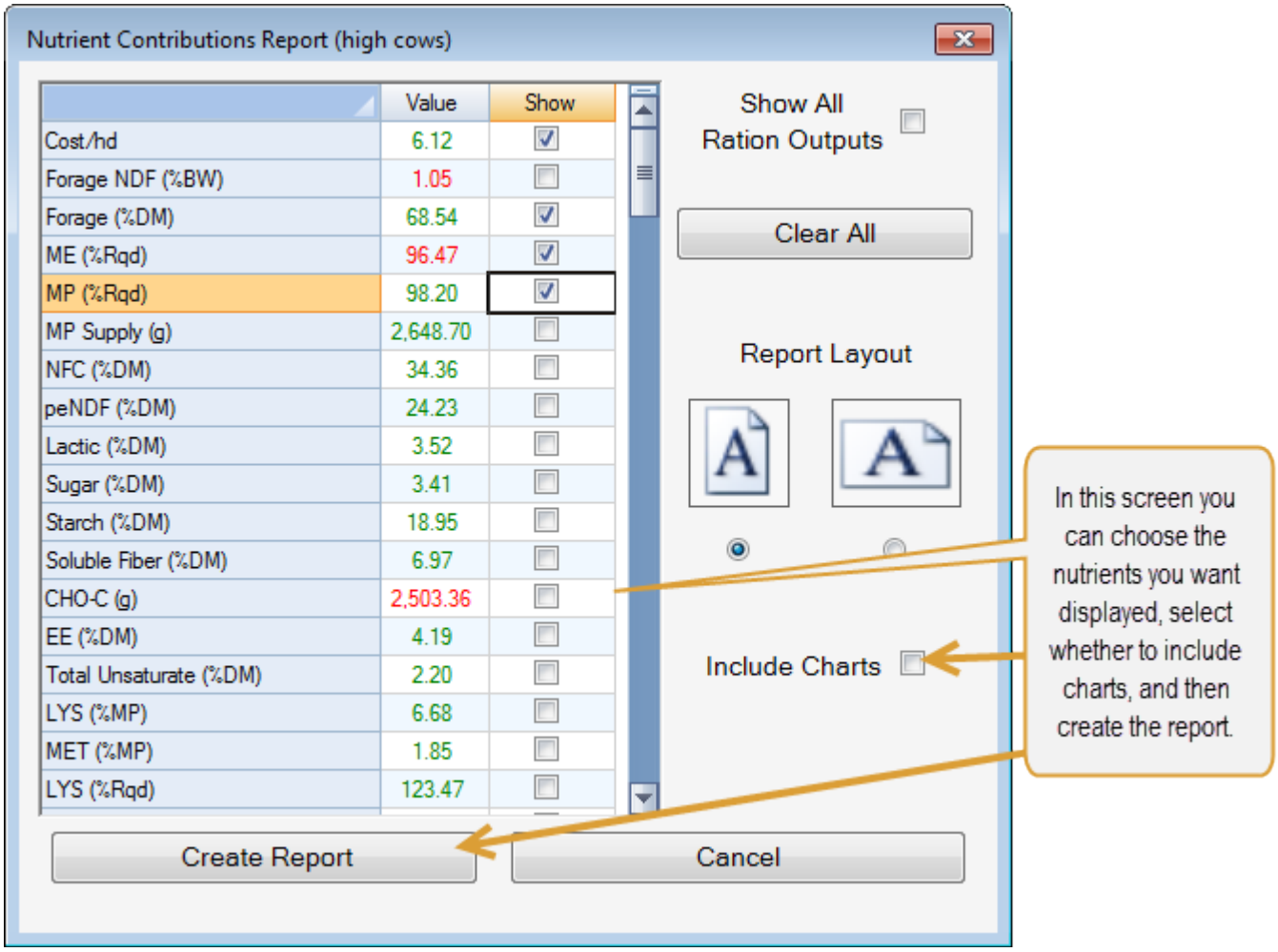
12.0 Recipes

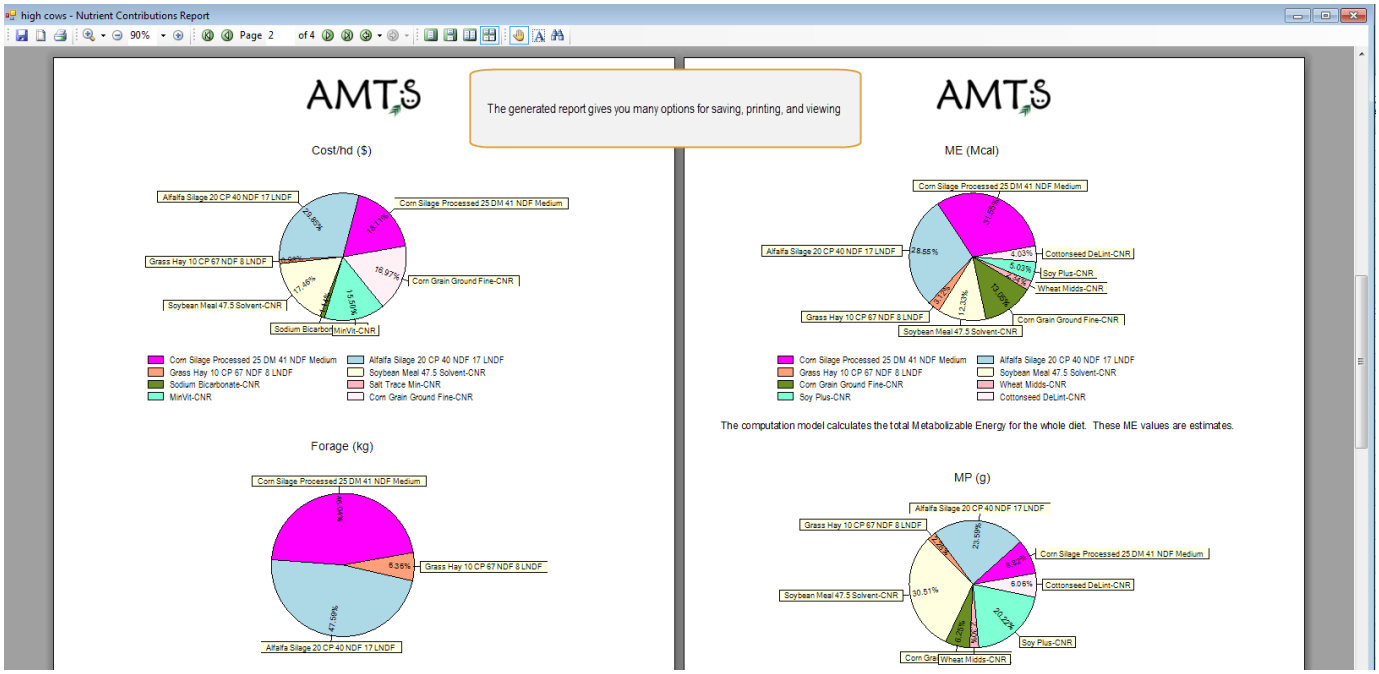
The Recipe Screen is where you will spend most of your time formulating rations (or recipes). Before you start entering numbers, take a look at the screen. On the top there are four slide buttons. The **Recipe** screen has two parts: the left side where you input basic information about the diet in terms of lbs Dry matter or lbs As Fed and where you add your feed costs; and the right where you can see the ration outputs in terms of predicted milk produced and predicted nutrients available. If your output screen doesn't show the safe mins and maxs and only shows min and max, right click anywhere in the right side window and choose "show safe min and safe max." from the drop down menu. You will want these to show so you are able to set up your nutrient constraints in the optimizer when you're "touching up" your diet.

12.1 Show Nutrient Contributions


These sliders allow you to set your feed constraint from the tab on the the top of the ration screen. After you have set the constraints, slide them to Hide to devote more space to the ration outputs
Select the recipe or Group you want to work on from the drop down list. The Cattle Groups are created in the Cattle page. If it is a new recipe, select Create from the drop down list next to Recipes
Setting the Auto Recalculate slider to OFF will keep the program from recalculating with every keystroke. If speed is not an issue, sliding to ON will show you output numbers as you change inputs
Clicking on the ? next to the nutrient in the Ration Outputs will bring up a dialog box that will show the nutrient contribution proportions each feed brings to the diet
The Right side of the screen shows inputs, the Left shows outputs. The proportions of each space can be changed by choosing to SHOW or HIDE the Optimizer Feed Constraints (using the sliders at the top pf the screen)

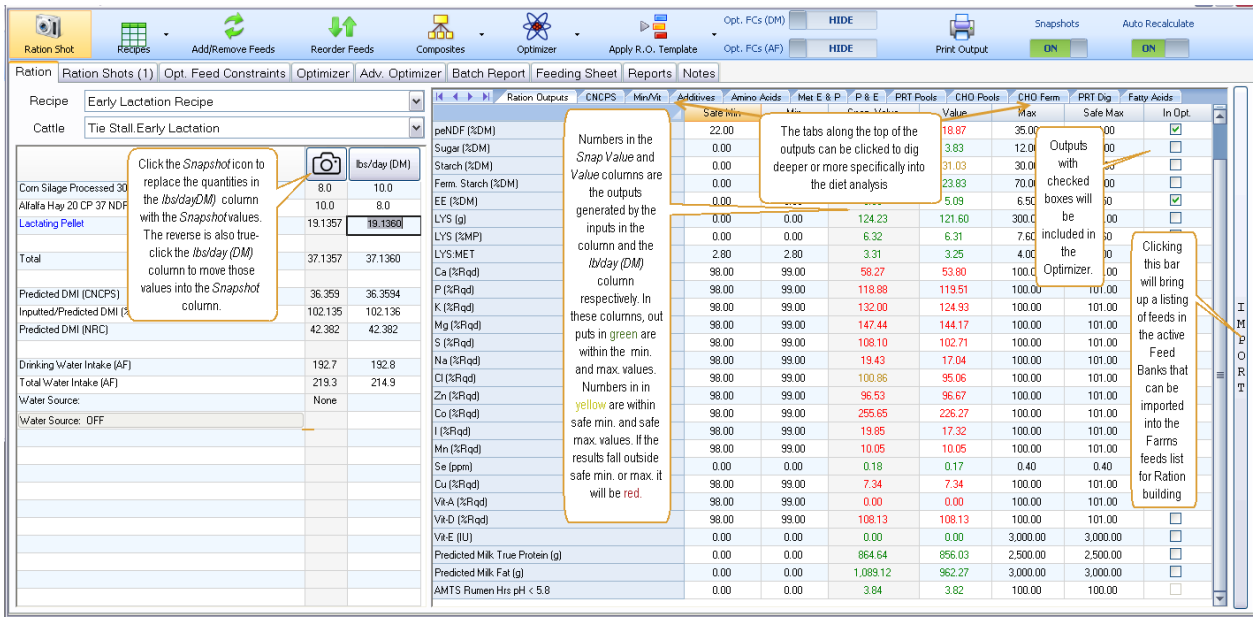

Cost/hd ($)
Cost/hd ($)
% of Total
Corn Silage Processed 25 DM 41 NDF Medium 1.107 18.08
Alfalfa Silage 20 CP 40 NDF 17 LNDF 1.831 29.91
Grass Hay 10 CP 67 NDF 8 LNDF 0.055 0.9
Soybean Meal 47.5 Solvent 1.068 17.44
Sodium Bicarbonate 0.073 1.19
Salt Trace Min 0.005 0.07
MinVit 0.947 15.47
Corn Grain Ground Fine 1.037 16.94
You can print the report
Cost/hd ($)
Alfalfa Silage 20 CP 40 NDF 17 LNDF
Corn Silage Processed 25 DM 41 NDF Medium
Grass Hay 10 CP 67 NDF 8 LNDF
Soybean Meal 47.5 Solvent-CNR
Corn Grain Ground Fine-CNR
Sodium Bicarbonate-CNR
MinVit-CNR
29.85%
18.11%
16.97%
17.46%
15.50%
The colors in the pie graph correspond to the ingredients in the Ration. This is a great aid for client who are very visually oriented
Corn Silage Processed 25 DM 41 NDF Medium
Alfalfa Silage 20 CP 40 NDF 17 LNDF
Grass Hay 10 CP 67 NDF 8 LNDF
Soybean Meal 47.5 Solvent-CNR
Sodium Bicarbonate-CNR
Salt Trace Min-CNR
MinVit-CNR
Corn Grain Ground Fine-CNR
From this page you can also choose to create reports that will show multiple nutrient contributions
Show Percentages
Show Feed Labels
Create Multiple Nutrients Report


Nutrient Contributions Report (high cows)
Value
Show
Cost/hd 6.12
Forage NDF (%BW) 1.05
Forage (%DM) 68.54
ME (%Rqd) 96.47
MP (%Rqd) 98.20
MP Supply (g) 2,648.70
NFC (%DM) 34.36
peNDF (%DM) 24.23
Lactic (%DM) 3.52
Sugar (%DM) 3.41
Starch (%DM) 18.95
Soluble Fiber (%DM) 6.97
CHO-C (g) 2,503.36
EE (%DM) 4.19
Total Unsaturate (%DM) 2.20
LYS (%MP) 6.68
MET (%MP) 1.85
LYS (%Rqd) 123.47
Show All Ration Outputs
Clear All
Report Layout
Include Charts
In this screen you can choose the nutrients you want displayed, select whether to include charts, and then create the report.
Create Report
Cancel

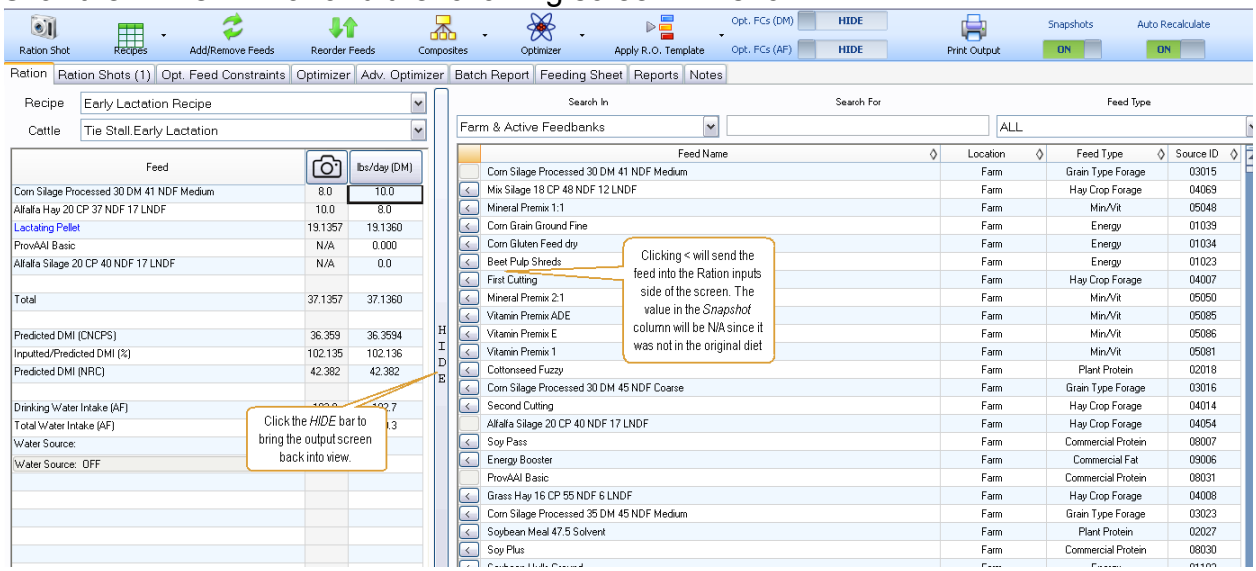

high cows - Nutrient Contributions Report
AMTS
The generated report gives you many options for saving, printing, and viewing
Cost/hd ($)
Forage (kg)
ME (Mcal)
The computation model calculates the total Metabolizable Energy for the whole diet. These ME values are estimates.
MP (g)

12.2 Snapshot Column

The values in (Snapshot) icon column are those for the existing diet. You can edit diets in the lbs/day (DM) column while keeping the original diet numbers in the Snapshot column. The outputs from both diets can be observed on the right side of the **Recipe** screen. The changes can be easily observed side-by-side and in conjunction with Safe min and Safe max. values.


Click the Snapshot icon to replace the quantities in the lbs/dayDM) column with the Snapshot values. The reverse is also true- click the lbs/day (DM) column to move those values into the Snapshot column.
Numbers in the Snap Value and Value columns are the outputs generated by the inputs in the column and the lb/day (DM) column respectively. In these columns, out puts in green are within the min. and max. values. Numbers in in yellow are within safe min. and safe max. values. If the results fall outside safe min. or max. it will be red.
The tabs along the top of the outputs can be clicked to dig deeper or more specifically into the diet analysis
Outputs with checked boxes will be included in the Optimizer.
Clicking this bar will bring up a listing of feeds in the active Feed Banks that can be imported into the Farms feeds list for Ration building
IMPORT

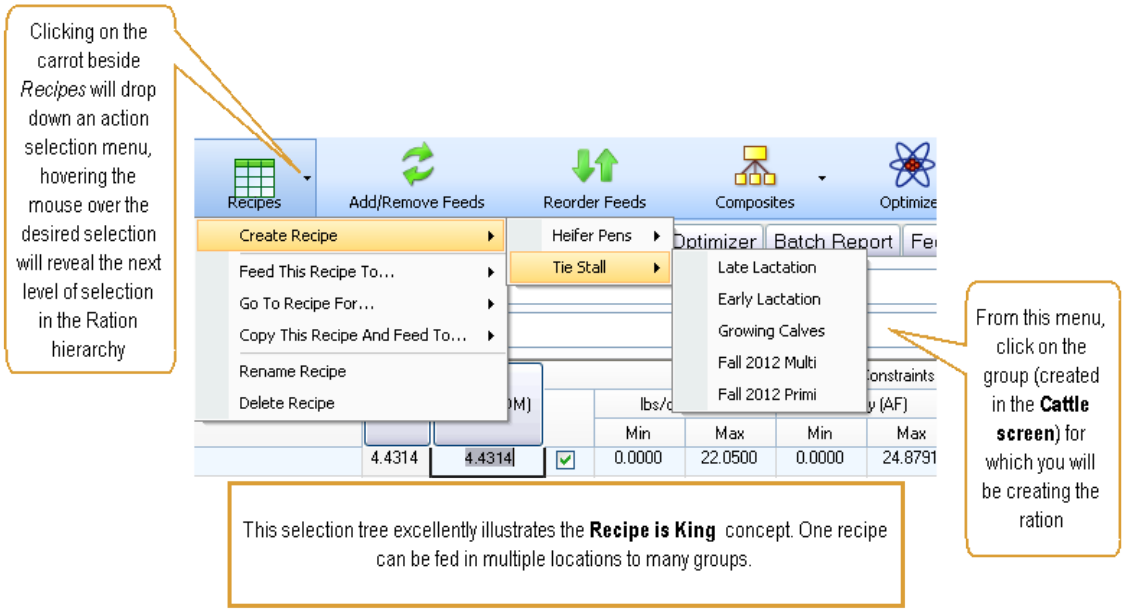
Click the *IMPORT* Bar and the following screen will show.

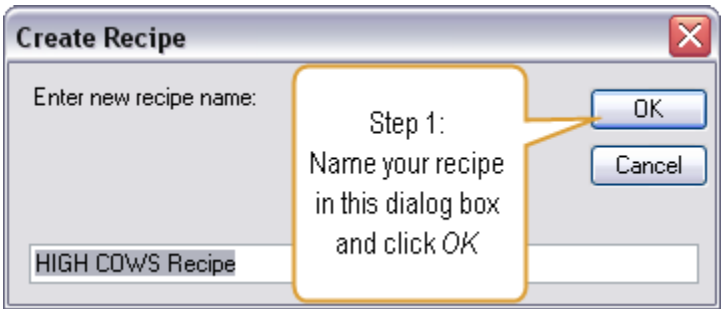

Clicking < will send the feed into the Ration inputs side of the screen. The value in the Snapshot column will be N/A since it was not in the original diet
Click the HIDE bar to bring the output screen back into view.
HIDE

TIP: The recipe is at the top of the hierarchy when it comes to recipes and cattle. A single recipe can be fed to many groups of cattle at different rates but, only one recipe can be fed to one cattle group.

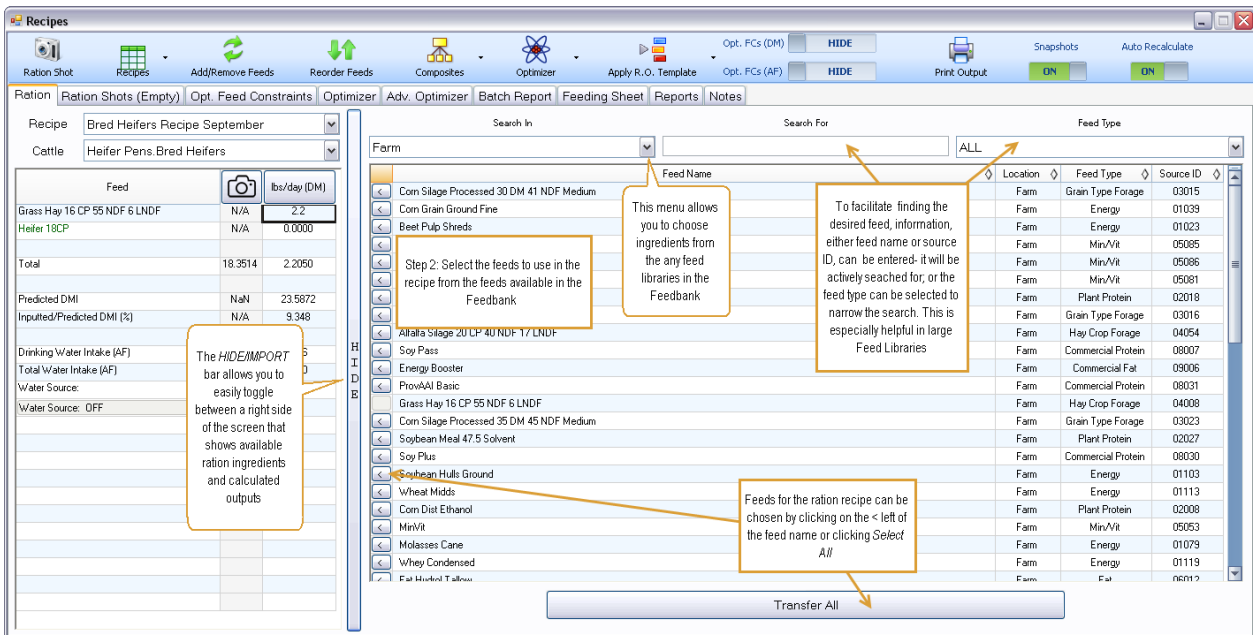
12.3 Creating a Recipe

As shown below, clicking on the dropdown arrow beside the *Recipe* button will bring up a menu list of actions, then locations, then groups for which you will formulate rations.

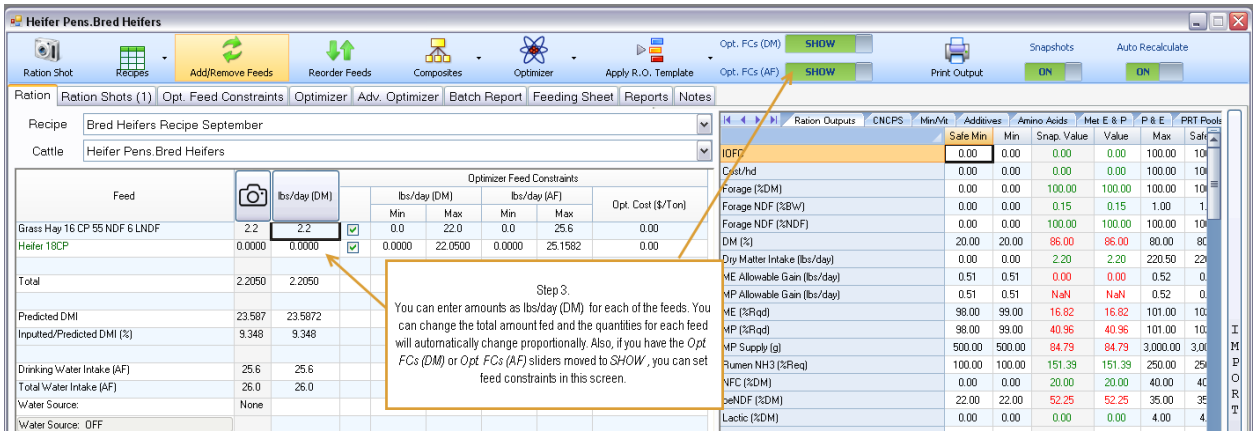




The name you choose for the recipe can be anything so long as the name does not include a dash.


Recipes
Ration Shot
Recipes
Add/Remove Feeds
Reorder Feeds
Composites
Optimizer
Apply R.O. Template
Opt. FCs (DM)
Opt. FCs (AF)
HIDE
Print Output
Snapshots
Auto Recalculate
ON
Ration
Ration Shots (Empty)
Opt. Feed Constraints
Optimizer
Adv. Optimizer
Batch Report
Feeding Sheet
Reports
Notes
Recipe
Bred Heifers Recipe September
Cattle
Heifer Pens.Bred Heifers
Feed
lbs/day (DM)
Grass Hay 16 CP 55 NDF 6 LNDF
Heifer 18CP
Total
Predicted DMI
Inputted/Predicted DMI (%)
Drinking Water Intake (AF)
Total Water Intake (AF)
Water Source:
Water Source: OFF
The HIDE/IMPORT bar allows you to easily toggle between a right side of the screen that shows available ration ingredients and calculated outputs
Search In
Farm
Search For
Feed Type
ALL
Feed Name
Location
Feed Type
Source ID
Step 2: Select the feeds to use in the recipe from the feeds available in the Feedbank
This menu allows you to choose ingredients from the any feed libraries in the Feedbank
To facilitate finding the desired feed, information, either feed name or source ID, can be entered- it will be actively seached for, or the feed type can be selected to narrow the search. This is especially helpful in large Feed Libraries
Feeds for the ration recipe can be chosen by clicking on the < left of the feed name or clicking Select All
Transfer All

TIP: The order that you select the feeds, is the order the feed will appear in the diet. Don't worry if you don't put them in the correct order; you can always reorder them by clicking on the reorder button on the tool bar.



You can input DM amounts on the fly. The simplest way to input amounts is to use the arrow keys to move around. After leaving each cell, the outputs (right side of the screen) are updated. You can also change the total amount of a recipe fed just by double clicking on the DM total and inputting a new value.

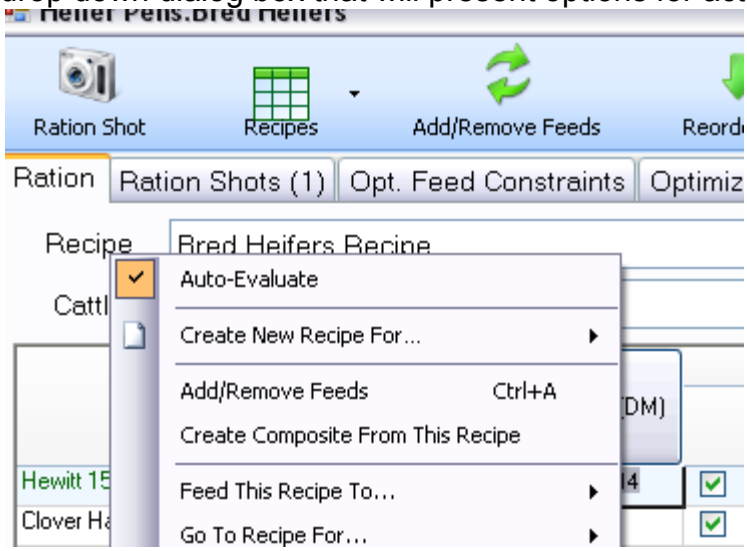
The cattle drinking water is set to on when you add a drinking source to the Cattle screen. You can add the water source, or other water sources, you created in the recipe as an ingredient. This would be used if water is added to the feeds in a TMR or composite. At the bottom of the screen the water intake prediction is also shown in pounds along with the name of the water source used for that cattle group. The drinking water intake is calculated in the row "Drinking Water Intake". Total water intake includes the water content of feeds and water added as a feed ingredient.

TIP: all data is stored as a percentage dry matter coupled with total kilograms dry matter fed to the group. Thus, if working in As Fed, pounds, when you return to the

file, it is possible that 20 lbs is returned as 19.99 or 20.01. This is due to the data inter-conversions behind the scenes and should not be alarming.

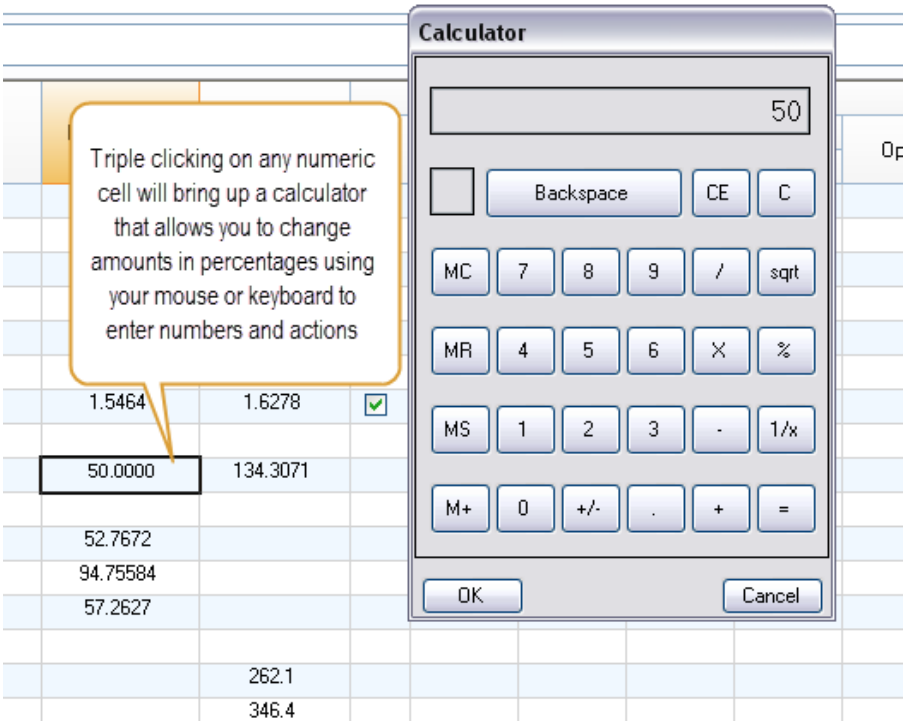
12.4 Right Clicking Options in the Recipe Window Menu

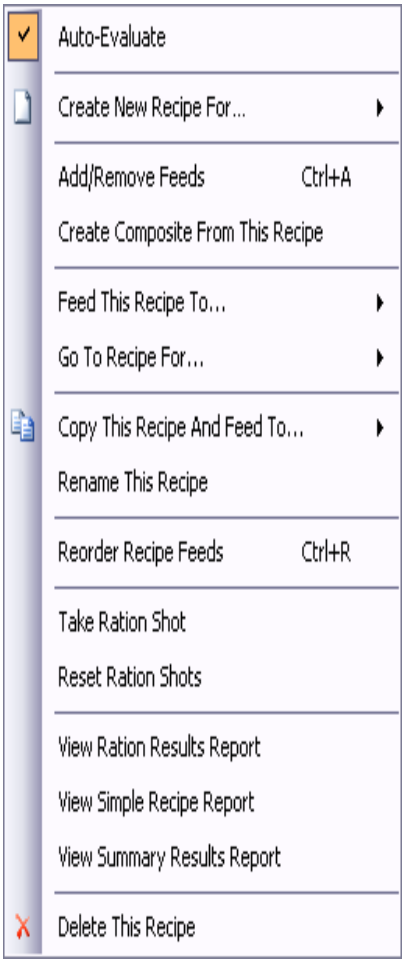
As in many screens in **AMTS.Cattle.Pro** right clicking anywhere on the screen will result in a drop down dialog box that will present options for actions.



TIP: The Recipe screen in **AMTS** includes many versatile ways to input information or take actions. Without navigating away from the Recipe screen, you can right click, double click, or triple click. Each of these actions will bring up different, useful boxes in which the data can be entered, removed, renamed, calculated, even transformed into reports. These same actions are available through ribbon buttons and tabs.

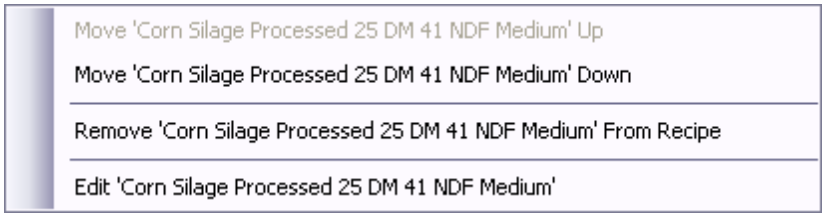
For example, if the total diet was 50 lbs DM and you wanted to increase it 5%, triple click on the 50 and either use your mouse or type in * *1.05* and click on the = sign, *OK*. This will input the calculated amount into the total DM cell. Either strike *Enter* or click off the cell and the outputs will be updated. All feed amounts will have been increased 5% based upon their dry matter percentage of the recipe.





If you **RIGHT** click on an empty row in the Recipe Feeds side of the Recipe screen, this "pop up" menu appears:

- **Auto-Evaluate**: when checked, the ration computations in the window on the right side of the screen will be updated each time a value is entered. The program will run faster when the auto-recalculate is set to "off". To recalculate the computations when the auto-recalculate is off, click on the at the top of the screen. Or, you can simply press the **F9** key to recalc.
- **Add/Remove Feeds**: to add or remove feeds from the current ration feed list.
- **Create Composite From This Recipe**: see page 55 for more information on creating a composite.
- **Feed This Recipe To…** Selects which cattle group to feed the created recipe to by first showing you locations, then groups. Changes you make to this recipe will affect all the groups it is fed to
- **Go To Recipe For…**Selects for location, then group; changes your screen to a previously created recipe
- **Copy This Recipe And Feed To…**Selects for location, then group; effectively copies recipe to another group in the same farm. Changes made to the recipe will only affect the group you are working in.
- **Reordering Recipe Feeds**: Clicking on this brings up a screen with a list of the recipe feeds and column for their new order. Simply click on the feeds in the order you want them to appear on the recipe screen (and in reports). You do not need to click on every feed. Click on the feeds through the ones you want to reorder and leave any remaining alone. When you click on the Set Feeds Order button, the feeds are reordered and feeds you did not click on are in the same order as they were. You can also sort alphabetically or by dry matter or as-fed amount.
- **Take Ration Shot**: see page 68
- **Reset Ration Shots**: erases all of the current ration shots.
- **View Ration Results Report**: Generates a Ration Results Report as illustrated on page 90
- **View Simple Recipe Report**: Generates a report as illustrated on page 90
- **View Summary Results report**: Generates a report as illustrated on page 90
- **Delete This Recipe**: Deletes all the data the Information you have inputted from the Ration Screen. ***This action will result in a blank Ration Sheet***.

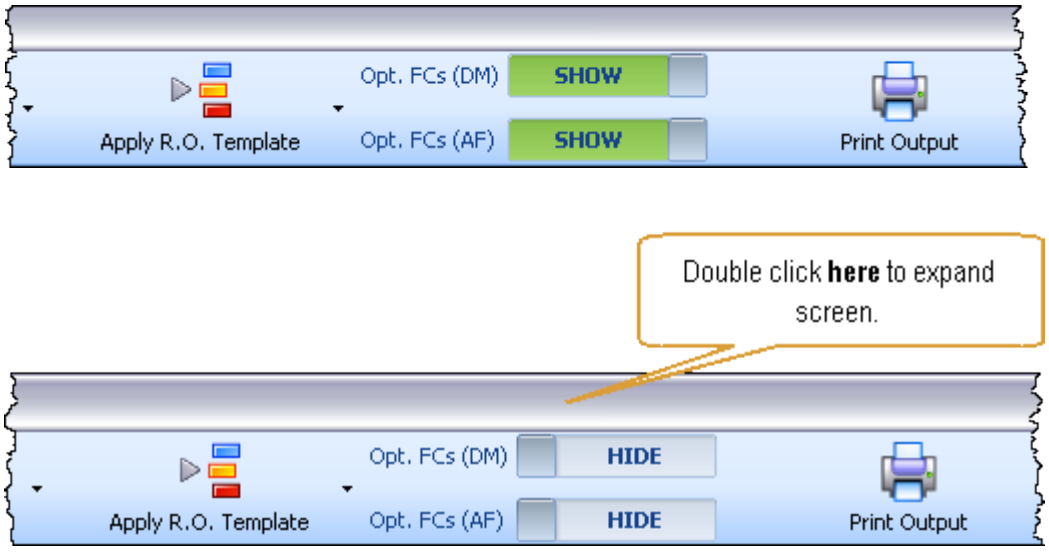

Move 'Corn Silage Processed 25 DM 41 NDF Medium' Up
Move 'Corn Silage Processed 25 DM 41 NDF Medium' Down
Remove 'Corn Silage Processed 25 DM 41 NDF Medium' From Recipe
Edit 'Corn Silage Processed 25 DM 41 NDF Medium'

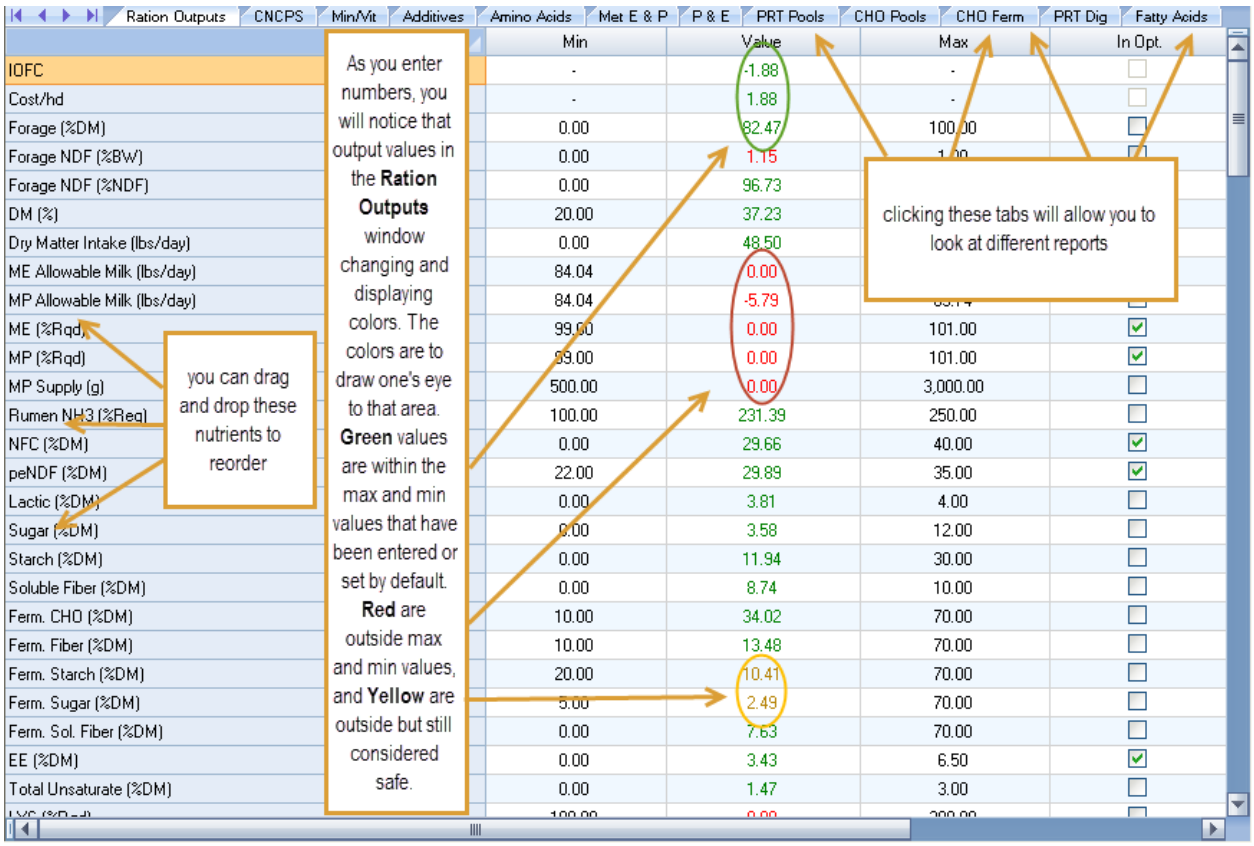
Right clicking in a numerically populated cell will generate a box that provides the option to move, remove, or edit the particular feed represented by that cell.

12.5 Ration Output Window

Gaining More Screen Space for Viewing Outputs

The Ration Output window presents a lot of information about predicted results from the diet you have constructed in the Recipe (Left) side of the screen. You can maximize the amount of the information you can view by sliding the Optimizer Feed Constraints buttons into the **HIDE** position. Also, in any screen of **AMTS,** double clicking on the gray area of the screen will expand that particular screen to the full size available.



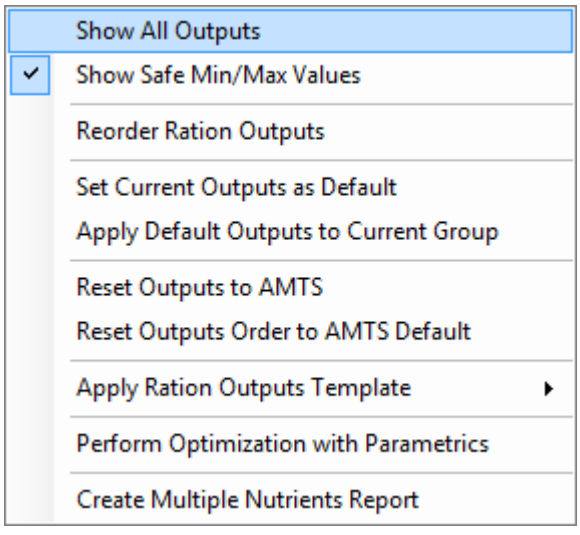

Ration Outputs
CNCPS
Min/Vit
Additives
Amino Acids
Met E & P
P & E
PRT Pools
CHO Pools
CHO Ferm
PRT Dig
Fatty Acids
Min
Value
Max
In Opt.
IOFC
Cost/hd
Forage (%DM)
Forage NDF (%BW)
Forage NDF (%NDF)
DM (%)
Dry Matter Intake (lbs/day)
ME Allowable Milk (lbs/day)
MP Allowable Milk (lbs/day)
ME (%Rqd)
MP (%Rqd)
MP Supply (g)
Rumen NH3 (%Req)
NFC (%DM)
peNDF (%DM)
Lactic (%DM)
Sugar (%DM)
Starch (%DM)
Soluble Fiber (%DM)
Ferm. CHO (%DM)
Ferm. Fiber (%DM)
Ferm. Starch (%DM)
Ferm. Sugar (%DM)
Ferm. Sol. Fiber (%DM)
EE (%DM)
Total Unsaturate (%DM)
As you enter numbers, you will notice that output values in the Ration Outputs window changing and displaying colors. The colors are to draw one's eye to that area. Green values are within the max and min values that have been entered or set by default. Red are outside max and min values, and Yellow are outside but still considered safe.
you can drag and drop these nutrients to reorder
clicking these tabs will allow you to look at different reports

TIP: If you have the recalculate button in the off mode you must turn it on or hit the F9 key to recalculate values.

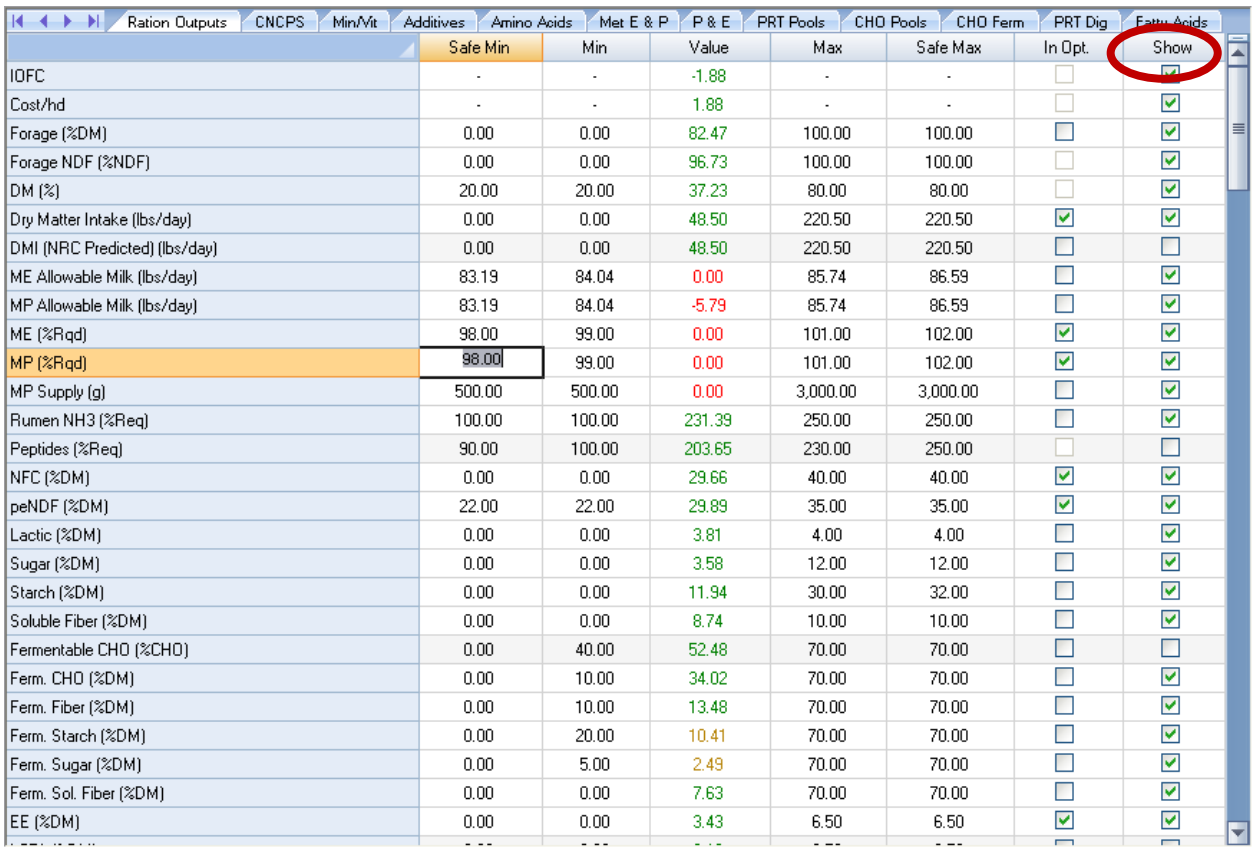
Nutrients on the Ration Output Window can be placed in user defined order by "dragging and dropping". There are also a variety of tabs along the top right of the screen that will allow you to look at different reports.

12.5.1 Options in the Ration Output Window Menu

As in the **Recipe** section of this screen, Right click on any cell in the window on the **Ration Outputs** Screen to see this popup menu:


Show All Outputs
Show Safe Min/Max Values
Reorder Ration Outputs
Set Current Outputs as Default
Apply Default Outputs to Current Group
Reset Outputs to AMTS
Reset Outputs Order to AMTS Default
Apply Ration Outputs Template
Perform Optimization with Parametrics
Create Multiple Nutrients Report

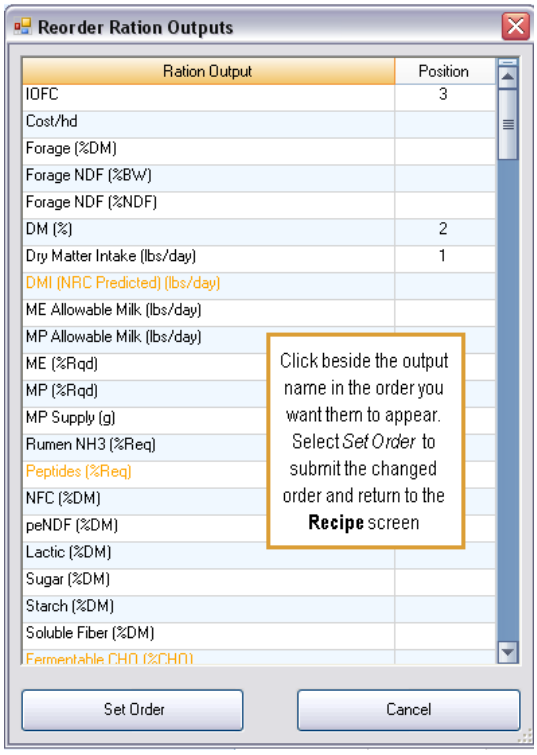
- **Show All Outputs**: Click on this option to see all outputs. To limit the outputs displayed, click on the check box in the Show column to show or hide an output.



Ration Outputs | CNCPS | Min/Vit | Additives | Amino Acids | Met E & P | P & E | PRT Pools | CHO Pools | CHO Ferm | PRT Dig | Fatty Acids

	Safe Min	Min	Value	Max	Safe Max	In Opt.	Show
IOFC	-	-	-1.88	-	-	☐	☑
Cost/hd	-	-	1.88	-	-	☐	☑
Forage (%DM)	0.00	0.00	82.47	100.00	100.00	☐	☑
Forage NDF (%NDF)	0.00	0.00	96.73	100.00	100.00	☐	☑
DM (%)	20.00	20.00	37.23	80.00	80.00	☐	☑
Dry Matter Intake (lbs/day)	0.00	0.00	48.50	220.50	220.50	☑	☑
DMI (NRC Predicted) (lbs/day)	0.00	0.00	48.50	220.50	220.50	☐	☐
ME Allowable Milk (lbs/day)	83.19	84.04	0.00	85.74	86.59	☐	☑
MP Allowable Milk (lbs/day)	83.19	84.04	-5.79	85.74	86.59	☐	☑
ME (%Rqd)	98.00	99.00	0.00	101.00	102.00	☑	☑
MP (%Rqd)	98.00	99.00	0.00	101.00	102.00	☑	☑
MP Supply (g)	500.00	500.00	0.00	3,000.00	3,000.00	☐	☑
Rumen NH3 (%Req)	100.00	100.00	231.39	250.00	250.00	☐	☑
Peptides (%Req)	90.00	100.00	203.65	230.00	250.00	☐	☐
NFC (%DM)	0.00	0.00	29.66	40.00	40.00	☑	☑
peNDF (%DM)	22.00	22.00	29.89	35.00	35.00	☑	☑
Lactic (%DM)	0.00	0.00	3.81	4.00	4.00	☐	☑
Sugar (%DM)	0.00	0.00	3.58	12.00	12.00	☐	☑
Starch (%DM)	0.00	0.00	11.94	30.00	32.00	☐	☑
Soluble Fiber (%DM)	0.00	0.00	8.74	10.00	10.00	☐	☑
Fermentable CHO (%CHO)	0.00	40.00	52.48	70.00	70.00	☐	☐
Ferm. CHO (%DM)	0.00	10.00	34.02	70.00	70.00	☐	☑
Ferm. Fiber (%DM)	0.00	10.00	13.48	70.00	70.00	☐	☑
Ferm. Starch (%DM)	0.00	20.00	10.41	70.00	70.00	☐	☑
Ferm. Sugar (%DM)	0.00	5.00	2.49	70.00	70.00	☐	☑
Ferm. Sol. Fiber (%DM)	0.00	0.00	7.63	70.00	70.00	☐	☑
EE (%DM)	0.00	0.00	3.43	6.50	6.50	☑	☑

- **Show Safe Min/Max Values**: set the screen to display safe min/max values. Safe Min/Max values provide an additional color option on this screen. If a value is within the Min/Max, the result is in Green. If it is within Safe Min/Min or Max/Safe Max, it will be in Yellow. If outside Safe Min/Max, it is in Red. In **.Pro**, the Safe Min/Max values are also used in the advanced optimizer.

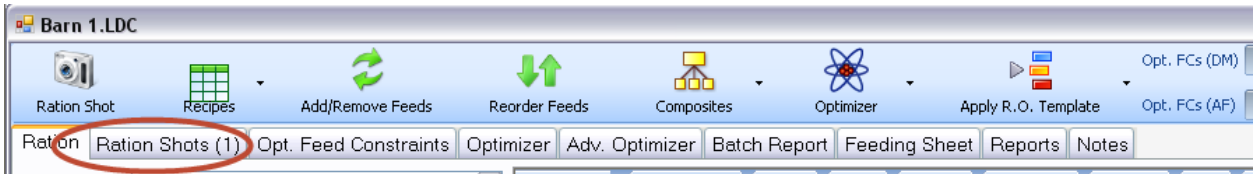


- **Reorder Ration Outputs**: You can change the order by clicking in the position column of the output value you want to see first, second, etc.
- **Set Current Outputs as Default**: Click on this option to set the current outputs as the default. Otherwise, the recipe screen reverts to its original layout for all new recipes. The "default" saved is the setup information, i.e. which output items are shown and their order on the screen.
- **Apply Default Outputs to Current Group**: resets the current group output options to the default.
- **Reset Outputs to AMTS defaults**: If you want the original AMTS selections to be the default, click on Set Current Outputs to Default.
- **Reset Output Order to AMTS default**: If you want the original AMTS order to be the default, click on Set Current Outputs to Default.

TIP: Occasionally AMTS will add a new nutrient to the program. In order for you to use the new nutrient in the optimizer, you will have to "Reset Outputs to AMTS defaults.

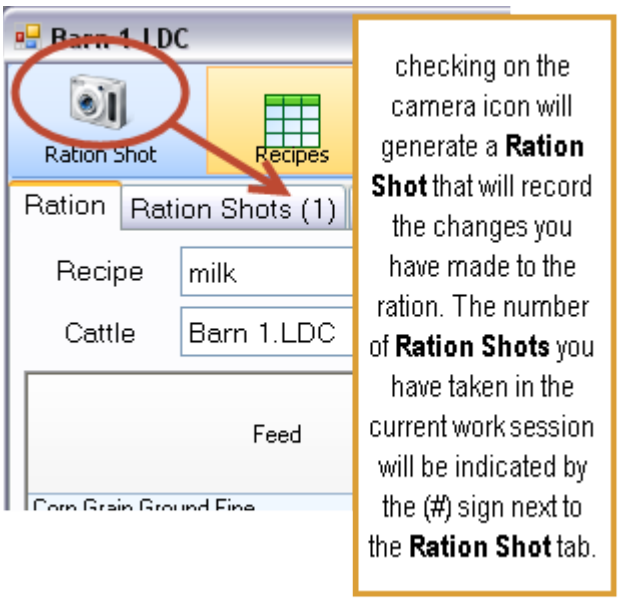
12.6 Recipe Screen Tabs

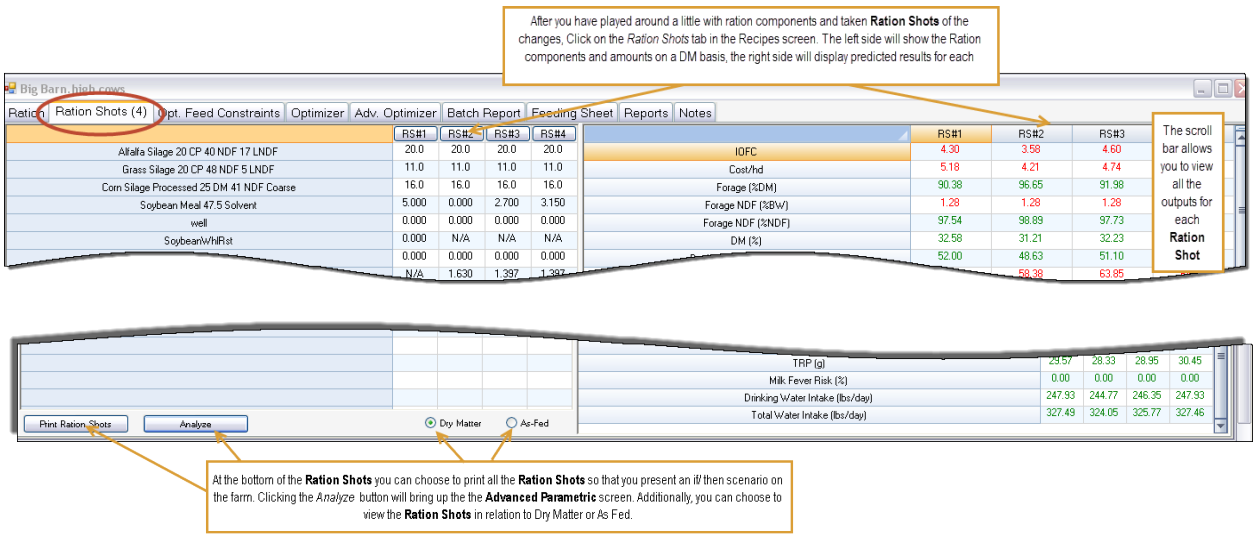
Notice the row of tabs over the left hand window of the Recipe Screen. The **Ration** tab has been discussed above. Other tabs of interest are: Ration Shots, Opt. Feed Constraints, Optimizer, Adv. Optimizer, Batch Report, Feeding Sheet, Reports, and Notes.



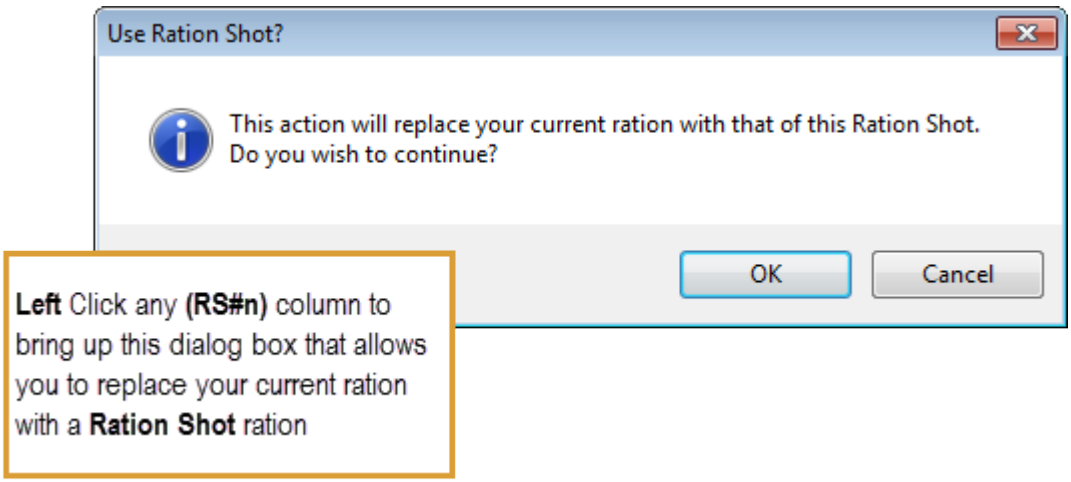
12.6.1 Ration Shots™

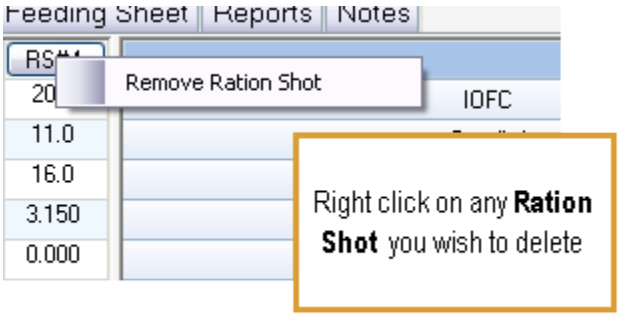
When working within a group on the **Ration** screen or the **Optimizer** screen, you can capture the ration as it currently exists coupled with the outputs as listed on the *Ration Outputs* tab. The **Ration Shot™** tab allows you to make changes in the existing ration while maintaining the original numbers. When you open the Ration Screen by clicking *Ration* you will hear the noise you designated in the *Settings* tab on the ribbon. This action preserves the existing ration numbers. You can then make changes in the ration and temporarily save those as a **Ration Shot™.** The configuration of the **Ration Shot™** screen allows for side-by-side comparisons as you "work" the numbers. Take a **Ration Shot™** of the original, make some changes, take another **Ration Shot™**, and on and on. The number of **Ration Shots™** is unlimited!

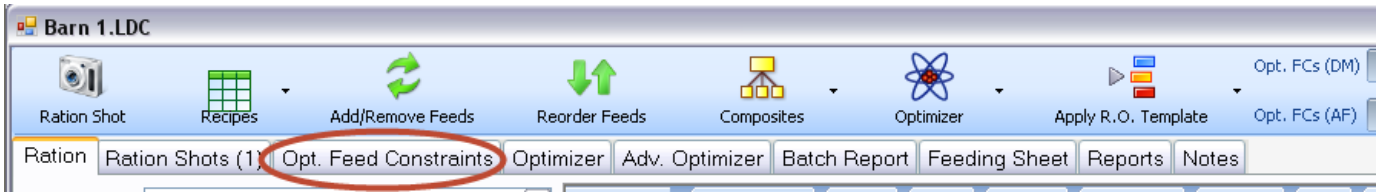

Barn 1.LDC
Ration Shot
Recipes
Ration
Ration Shots (1)
Recipe
milk
Cattle
Barn 1.LDC
Feed
checking on the camera icon will generate a Ration Shot that will record the changes you have made to the ration. The number of Ration Shots you have taken in the current work session will be indicated by the (#) sign next to the Ration Shot tab.


After you have played around a little with ration components and taken **Ration Shots** of the changes, Click on the *Ration Shots* tab in the Recipes screen. The left side will show the Ration components and amounts on a DM basis, the right side will display predicted results for each
Ration
Ration Shots (4)
Opt. Feed Constraints
Optimizer
Adv. Optimizer
Batch Report
Feeding Sheet
Reports
Notes
RS#1
RS#2
RS#3
RS#4
Alfalfa Silage 20 CP 40 NDF 17 LNDF
Grass Silage 20 CP 48 NDF 5 LNDF
Corn Silage Processed 25 DM 41 NDF Coarse
Soybean Meal 47.5 Solvent
well
SoybeanWhlRst
IOFC
Cost/hd
Forage (%DM)
Forage NDF (%BW)
Forage NDF (%NDF)
DM (%)
The scroll bar allows you to view all the outputs for each **Ration Shot**
TRP (g)
Milk Fever Risk (%)
Drinking Water Intake (lbs/day)
Total Water Intake (lbs/day)
Print Ration Shots
Analyze
Dry Matter
As-Fed
At the bottom of the **Ration Shots** you can choose to print all the **Ration Shots** so that you present an it' then scenario on the farm. Clicking the *Analyze* button will bring up the the **Advanced Parametric** screen. Additionally, you can choose to view the **Ration Shots** in relation to Dry Matter or As Fed.

Ration Shots™ are not stored. If you close a group, their Shots are discarded. However, if you keep the group open, you can work with other groups and move back and forth between groups.

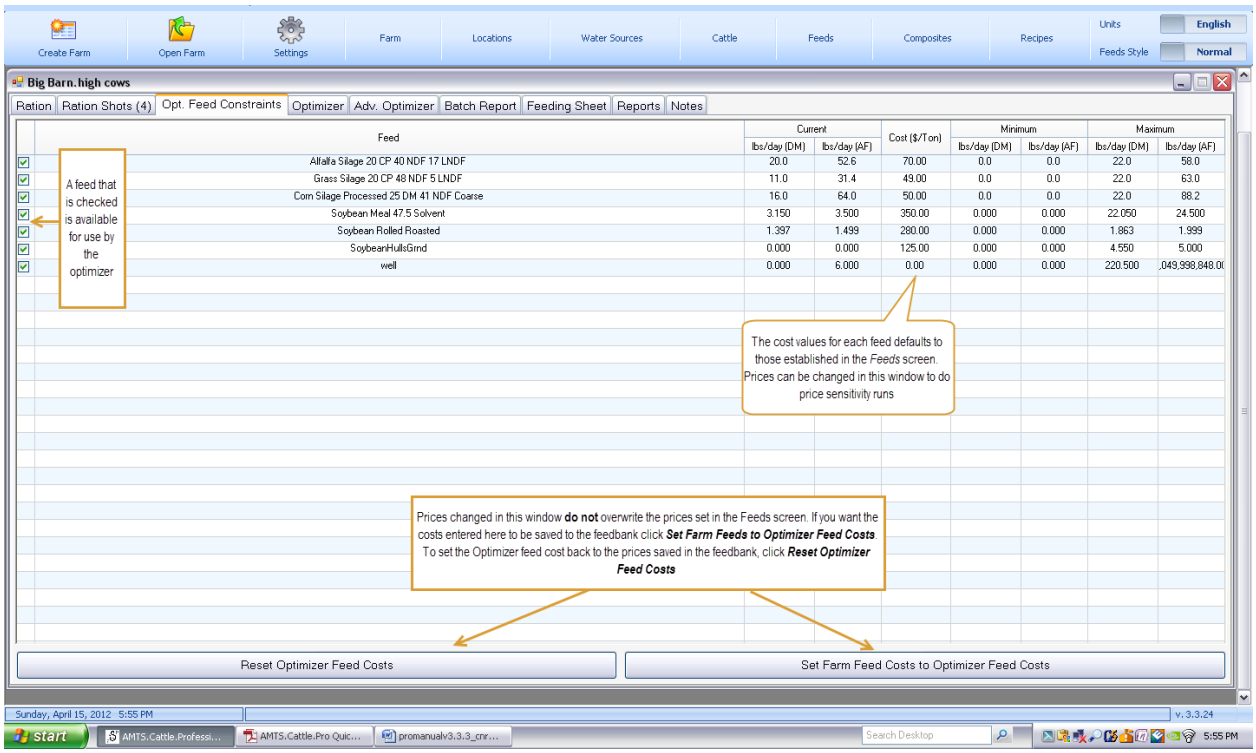

Use Ration Shot?
This action will replace your current ration with that of this Ration Shot.
Do you wish to continue?
OK
Cancel
Left Click any **(RS#n)** column to bring up this dialog box that allows you to replace your current ration with a **Ration Shot** ration

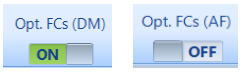




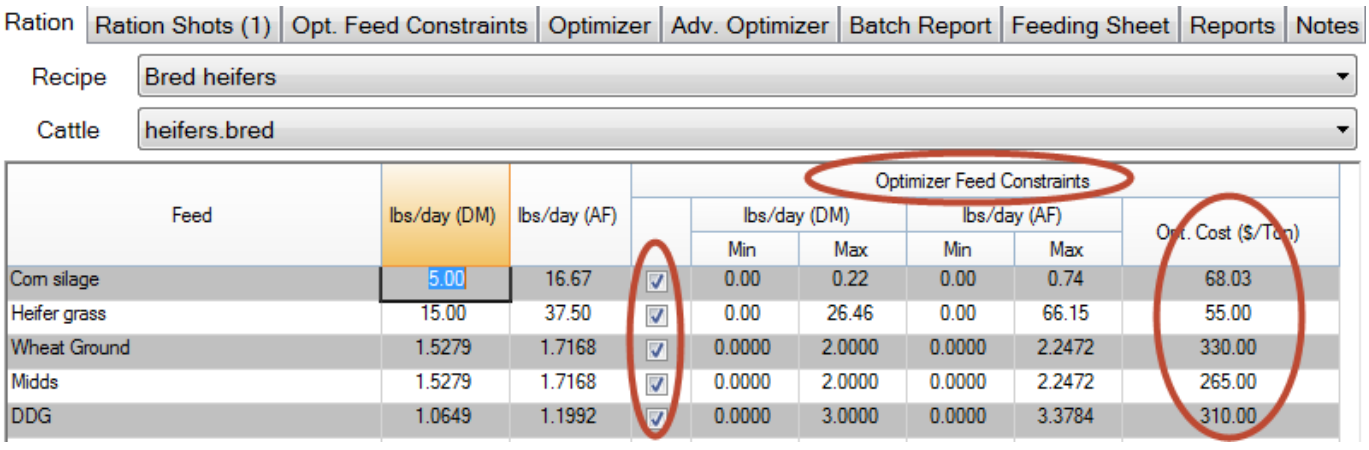
12.6.2 Opt. Feed Constraints

To set feed constraints for optimization, click on the tab titled *Opt. Feed Constraints*. Selecting that tab will produce a screen which looks thusly:


Big Barn.high cows
Ration
Ration Shots (4)
Opt. Feed Constraints
Optimizer
Adv. Optimizer
Batch Report
Feeding Sheet
Reports
Notes
Feed
Current
Cost ($/Ton)
Minimum
Maximum
lbs/day (DM)
lbs/day (AF)
Alfalfa Silage 20 CP 40 NDF 17 LNDF
Grass Silage 20 CP 48 NDF 5 LNDF
Corn Silage Processed 25 DM 41 NDF Coarse
Soybean Meal 47.5 Solvent
Soybean Rolled Roasted
SoybeanHullsGrnd
well
A feed that is checked is available for use by the optimizer
The cost values for each feed defaults to those established in the Feeds screen. Prices can be changed in this window to do price sensitivity runs
Prices changed in this window do not overwrite the prices set in the Feeds screen. If you want the costs entered here to be saved to the feedbank click Set Farm Feeds to Optimizer Feed Costs. To set the Optimizer feed cost back to the prices saved in the feedbank, click Reset Optimizer Feed Costs
Reset Optimizer Feed Costs
Set Farm Feed Costs to Optimizer Feed Costs



You can also work from the ***Ration*** tab itself. When either of the two slides are set to **On** (both can be **On**), the ration screen adds the checkbox, amount constraints, and price to the left side of the screen. You can then make changes to those quantities for consideration when running the optimizer.



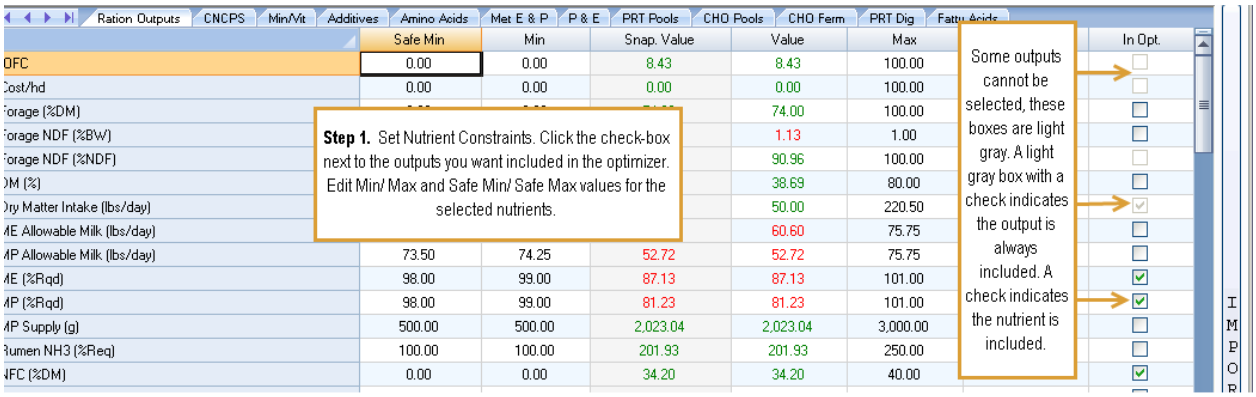
12.6.3 Optimization

AMTS.Cattle.Pro has two optimizers: a linear optimizer and a non-linear optimizer. The linear optimizer results in a least cost formulation and is started by clicking on the "Optimizer" tab. The non-linear optimizer will optimize for least cost ration or maximum income over feed costs. To do this, click on the "Adv. Optimizer" tab. The first steps for using either optimizer are the same.

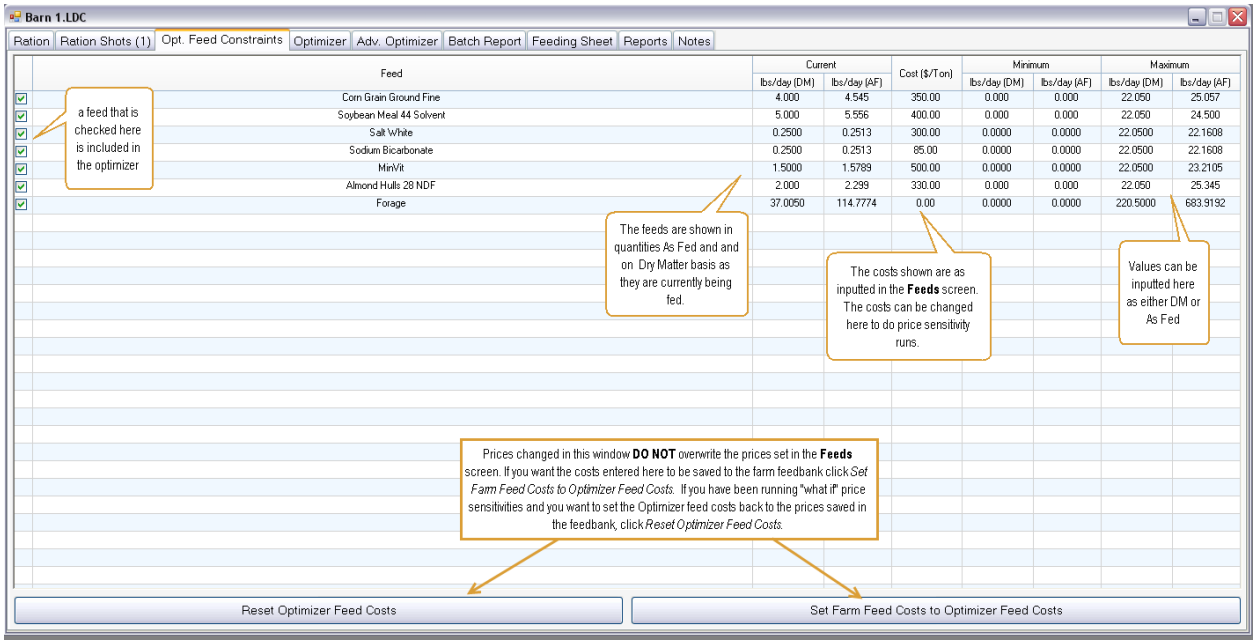
Tip: When working in the **Recipe** screen, you can "free up" screen space by turning off the *Snapshot* feature. To do this: Go to *Settings>Recipe Screen Settings*>Un-tick the *Show Snapshot Column(s)*. You can also slide the *Opt. FCs(DM)*and*(AF)* to *Hide* position to give your-self more screen space devoted to outputs. These are actions that you can easily reverse when you want to work in the input side of the **Recipe** screen.

12.6.3.1 Setting up for Optimization

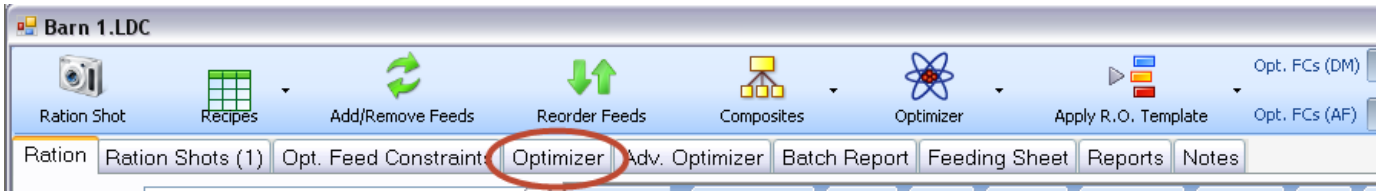
Step 1. Set Nutrient Constraints—this is performed in the Outputs (right) side of Recipe Screen.


Ration Outputs
CNCPS
Min/Vit
Additives
Amino Acids
Met E & P
P & E
PRT Pools
CHO Pools
CHO Ferm
PRT Dig
Fatty Acids
Safe Min
Min
Snap. Value
Value
Max
In Opt.
Step 1. Set Nutrient Constraints. Click the check-box next to the outputs you want included in the optimizer. Edit Min/ Max and Safe Min/ Safe Max values for the selected nutrients.
Some outputs cannot be selected, these boxes are light gray. A light gray box with a check indicates the output is always included. A check indicates the nutrient is included.

Step 2. Set Feed Constraints—performed in the Inputs (left) side of the Recipe Screen

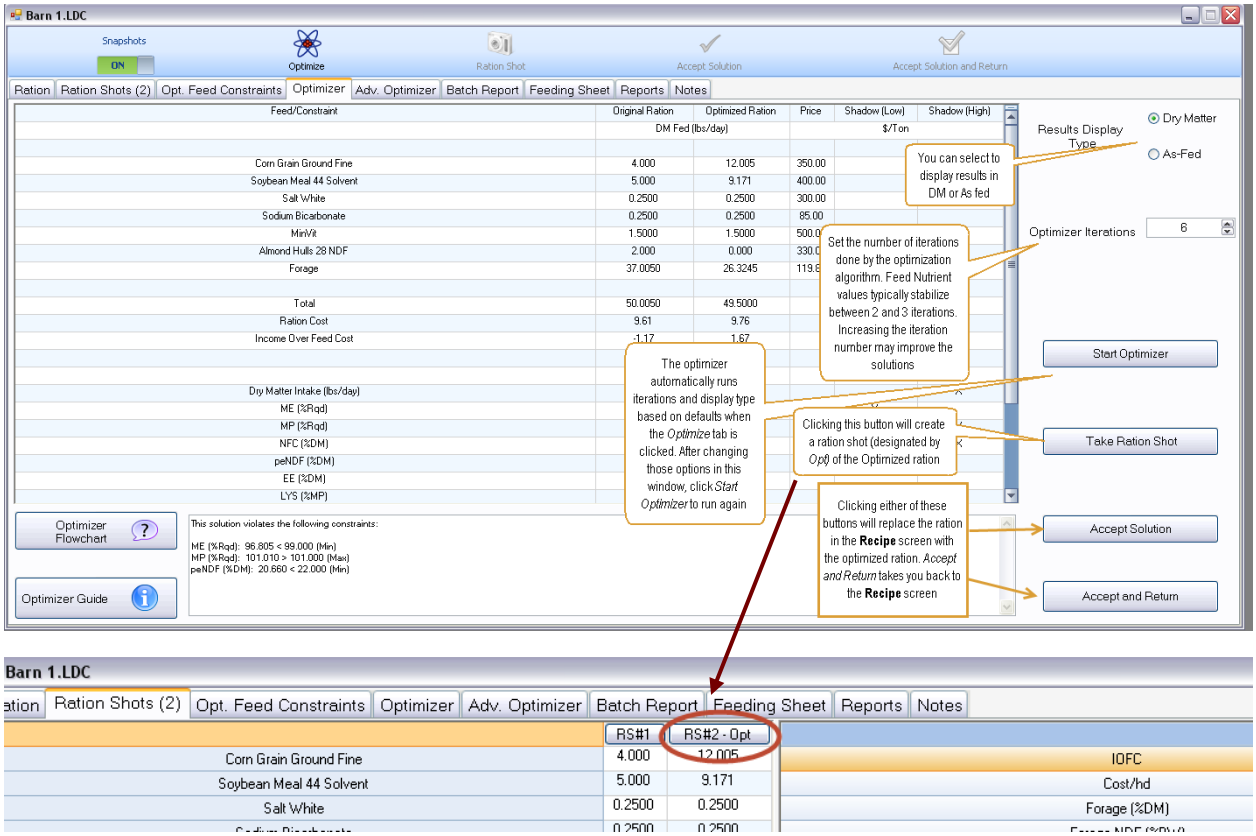

Barn 1.LDC
Ration
Ration Shots (1)
Opt. Feed Constraints
Optimizer
Adv. Optimizer
Batch Report
Feeding Sheet
Reports
Notes
Feed
Current
Cost ($/Ton)
Minimum
Maximum
lbs/day (DM)
lbs/day (AF)
Corn Grain Ground Fine
Soybean Meal 44 Solvent
Salt White
Sodium Bicarbonate
MinVit
Almond Hulls 28 NDF
Forage
a feed that is checked here is included in the optimizer
The feeds are shown in quantities As Fed and and on Dry Matter basis as they are currently being fed.
The costs shown are as inputted in the Feeds screen. The costs can be changed here to do price sensitivity runs.
Values can be inputted here as either DM or As Fed
Prices changed in this window DO NOT overwrite the prices set in the Feeds screen. If you want the costs entered here to be saved to the farm feedbank click Set Farm Feed Costs to Optimizer Feed Costs. If you have been running "what if" price sensitivities and you want to set the Optimizer feed costs back to the prices saved in the feedbank, click Reset Optimizer Feed Costs.
Reset Optimizer Feed Costs
Set Farm Feed Costs to Optimizer Feed Costs

Step 3. Start the Optimizer



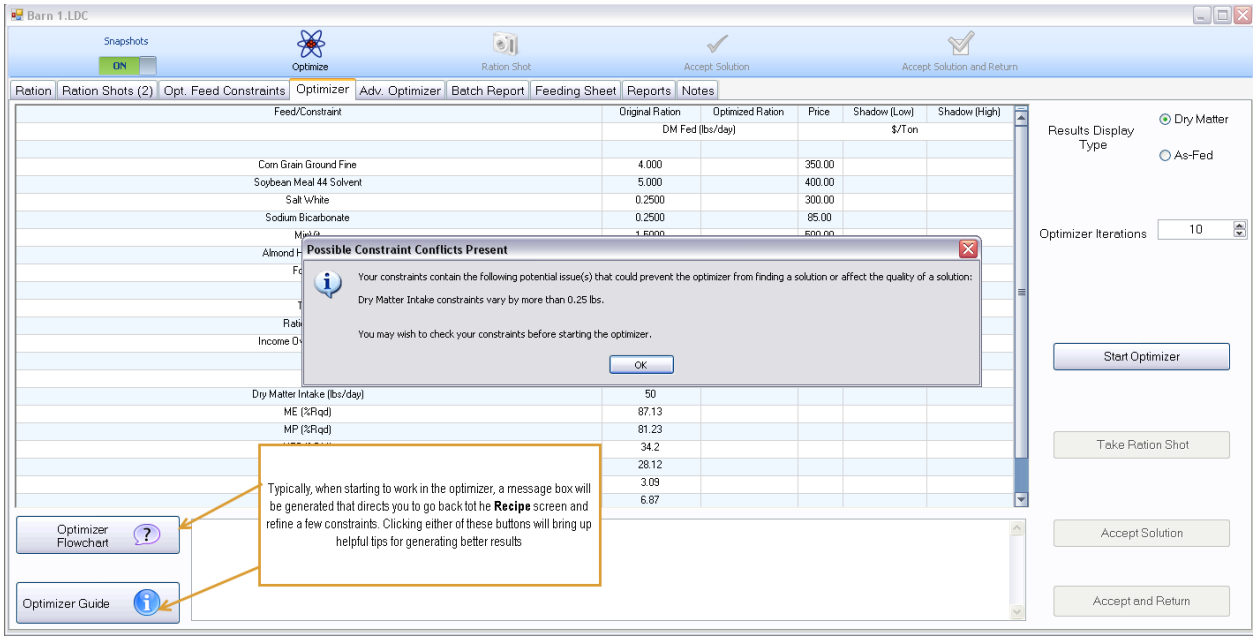
12.6.3.2 Linear Optimizer

Click on the Optimizer tab on the Recipe Screen. You must have prices in all the feeds for this optimizer to work. In your nutrient constraints you can only optimize off of values that do not depend on model predictive values; for instance MP%req *not* MP Allowable milk.



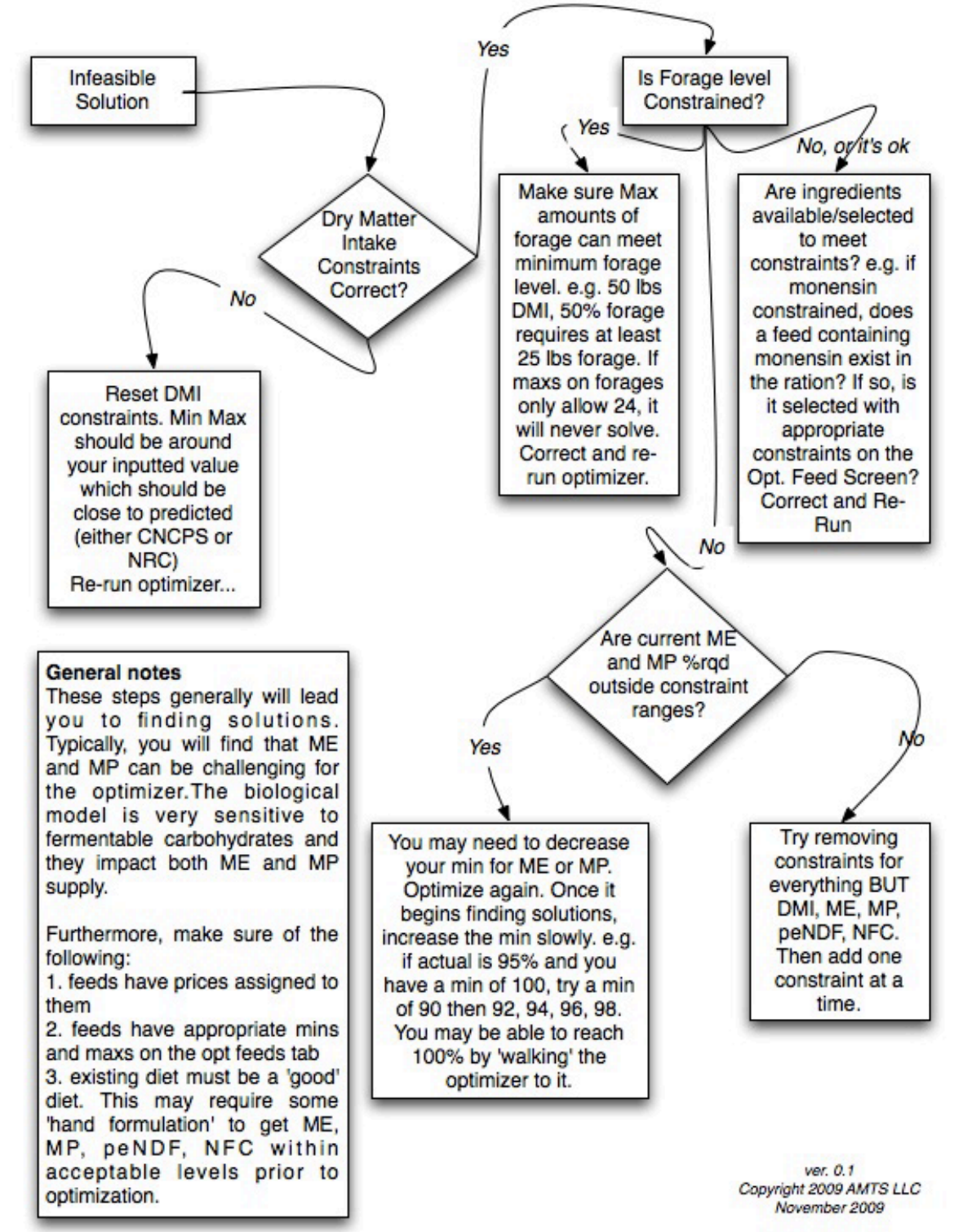
12.6.3.2.1 Optimizer Assistance for Constraint Conflict notices

The first time putting a diet through the linear optimizer it is typical to receive a dialog outlining possible conflicts to feed constraints. The notice will list the areas in which the ration needs to be tweaked for best optimization. For assistance in this area there are guides that **AMTS** has developed to guide you in optimizing.



12.6.3.2.2 Optimizer Flowchart

Clicking the Optimizer Flowchart button will generate the following pdf.


Infeasible Solution
Dry Matter Intake Constraints Correct?
Yes
No
Reset DMI constraints. Min Max should be around your inputted value which should be close to predicted (either CNCPS or NRC)
Re-run optimizer...
Is Forage level Constrained?
Yes
No, or it's ok
Make sure Max amounts of forage can meet minimum forage level. e.g. 50 lbs DMI, 50% forage requires at least 25 lbs forage. If maxs on forages only allow 24, it will never solve. Correct and re-run optimizer.
Are ingredients available/selected to meet constraints? e.g. if monensin constrained, does a feed containing monensin exist in the ration? If so, is it selected with appropriate constraints on the Opt. Feed Screen? Correct and Re-Run
No
Are current ME and MP %rqd outside constraint ranges?
Yes
No
You may need to decrease your min for ME or MP. Optimize again. Once it begins finding solutions, increase the min slowly. e.g. if actual is 95% and you have a min of 100, try a min of 90 then 92, 94, 96, 98. You may be able to reach 100% by 'walking' the optimizer to it.
Try removing constraints for everything BUT DMI, ME, MP, peNDF, NFC. Then add one constraint at a time.
General notes
These steps generally will lead you to finding solutions. Typically, you will find that ME and MP can be challenging for the optimizer.The biological model is very sensitive to fermentable carbohydrates and they impact both ME and MP supply.
Furthermore, make sure of the following:
1. feeds have prices assigned to them
2. feeds have appropriate mins and maxs on the opt feeds tab
3. existing diet must be a 'good' diet. This may require some 'hand formulation' to get ME, MP, peNDF, NFC within acceptable levels prior to optimization.
ver. 0.1
Copyright 2009 AMTS LLC
November 2009

The Following pdf file will come up as a result of Clicking Optimizer Guide

Optimization in AMTS

a.k.a. How do I make this crazy thing work?

November 11, 2010

T.P. Tylutki

Optimization, especially non-linear optimization, is one of those areas that can drive a software company and its clients crazy! You may ask how this can be since optimization has been used in the feed industry for 30+ years. Well, that was in a linear world! This document is meant to explain some of the differences between optimizers and some hints/suggestions to making the AMTS optimizer perform.

In a linear world, optimization is easy. For example, let's use something like crude protein as a constraint. And, every feed has a crude protein content. The issue is that the crude protein content of a feed does NOT change with different diets or combinations of ingredients. Thus, the linear optimizer knows that for every increment it adds of this feed, so much protein will be added. Linear optimization is a relatively mature science and offers repeatable, predictable results for the right problem types.

Our world is not linear though. Feed ME and MP values are not constants. They vary based on diet, level of intake, and other feeds that may impact their digestibility. Think of driving up a hill. A linear hill means that the slope is constant. A non-linear hill though would mean we drive so far at one slope and then the hill gets steeper and steeper. A pure linear optimizer fails with these problems. That doesn't mean linear won't work though. Curve peeling can be used to look at small portions of the curve and through iterative processes, find a good solution. Another option is to use non-linear optimization. There are multiple types of non-linear optimization. One method is called evolutionary and uses genetic algorithms to search for solutions. GAs (genetic algorithms) are very powerful and allow for different objective functions (e.g. Maximize income over feed costs or Least Cost or Maximize Nitrogen Efficiency). Other non-linear optimizers, such as the one in CPMv3, exist and can work very well. All optimization methods have their limitations though. And software developers are left with a difficult balancing act, trying to balance speed with power and accuracy.

The linear optimizer uses a curve peeling approach. This method can, and does, work very well.

Making the AMTS Linear Optimizer Perform

It is important you understand how nutrient constraints are handled. For this example, we will use the following:

	Min	Value	Max
DMI, lbs/d	50.5	51	51.5
NFC, %DM	0	37	41

Internally, the linear optimizer does all calculations in metric, dry matter. Within the optimizer, constraints such as NFC are converted from a percentage to a mass. Thus, the above changes to:

Item	Min	Value	Max
DMI, kg/d	22.9	23.2	23.4
NFC, g/d	0	8,567	9,545

Thus, since each constraint is evaluated independently in the optimizer, it is possible to have a result that meets the constraints when:

DMI = 22.9 kg (DMI Min)
NFC = 9,545 g (NFC Max)

This gives an NFC of 41.68% DM, which some may consider different from a 41%. We could re-evaluate the result and say that it fails to meet constraints because the percentage is not
41. We decided not to do this though as it provides some additional flexibility and range for the
optimization.

Take home message: set your DMI constraints tight.

WARNING: when working with a new ration, the default DMI min is 0 and the
max is 220 (100 kg).

There are a handful of nutrients that non-linear in nature:

1. ME
2. MP
3. Rumen Ammonia
4. LYS
5. MET

These nutrients are estimated for each feed. These estimates are then used in the optimization. The resulting solution is then used to generate new feed values and optimization occurs again. This iterative process represents the curve peeling. By default, the linear optimizer does three (3) iterations; however, the user can change this in View, Settings, Advanced Settings. Our simulations show that the feed nutrient values stabilize typically between 2 and 3 iterations. Increasing the number of iterations may improve the solutions in
the 2nd and 3rd decimal point.

The most difficult nutrients to optimize are: ME %rqd, LYS %MP and MET %MP. We are working to improve the ME issue and have discovered work-arounds for LYS and

MET. Future program patches will include improvements to the optimizer as they are developed and implemented. For now, the following guidelines will assist you.

Optimization Tricks (shown are lactating cow tricks but should apply to heifers and dry cows as well)

Constraint	How to Set	Why
DMI	Start with +/- 0.5 lbs or with previously optimized diets, +/- 0.2 lbs.	The tighter DMI is set, the smaller the mass/% deviation. For the first run, ensure that your MIN MAX enclose the actual (ie if actual is 51, make min 50.5 and max 51.5).
ME %rqd	Desire 100%, you may want to input 103% but start with 100. Max: no trick. If you want 110%, input 110.	The result will typically be within 1-2 units of what you initially desired. Since we are curve peeling, ME feed values are an estimate so a little playing may be needed.
MP %rqd	Min: no trick Max: no trick	MP %rqd tends to be stable and seldom causes problems with a min value. You may want to make the MAX 120 to 125% just to give room for the optimizer to 'look'
Ammonia, %rqd	Set min to 100%. Perhaps not include in optimization if troublesome.	May need to adjust lower if infeasible solutions. We are exploring other nutrients to use as a proxy for ammonia. The requirement for ammonia is deep within the model and relies heavily on other model components.
LYS %rqd	If formulating for amino acids, MIN = 125% If not, MIN = 100%	If you use %rqd vs %MP, amino acids seldom cause infeasible solutions. If formulating for amino acids, the LYS 125% rqd min typically returns a diet that is at least 6.4% MP.
MET %rqd	If formulating for milk protein production, MIN = 135% If not, MIN = 100%	The 135% minimum will return a LYS:MET ratio near 2.9:1
All others	No tricks	Just make sure feeds are available that contain the nutrients you constrain upon. E.g. If you constrain monensin, ensure that a monensin containing feed exists in the ration.

I got infeasible even with these tricks. Now what?

Check these:

1. Did you start with a decent (maybe not ideal) diet? You must start with a diet in order for the feed values to be generated.
2. When I get the infeasible screen, I always tell it to optimize again. Sometimes it works. The Program is just starting from a little different spot and that may be all it takes.
3. Double check all your nutrient constraints as well as feed constraints. You cannot push Se to 0.35 ppm without a Se source available in the optimizer!
4. On ME, MP, LYS, MET, Ammonia: open up the constraints so that they enclose the current values. Try optimizing again. If it solves, start working with one constraint to see where it starts causing infeasible solutions again. Now do the next constraint.
5. Did you set a maximum on the feed amount too low?
6. Check your animal inputs. Do you have an input that is making this an impossible problem?
7. Do you have constraints set that make this an impossible solution? We have not built in checks yet (we are in the process of developing this) so check things like:
    a. Max DMI = 50 lbs
    b. Min forage = 50% (25 lbs)
    c. Forage 1 max inclusion 14 lbs
    d. Forage 2 max inclusion 10 lbs

    This is an infeasible problem as Forage 1 + 2 = 24 lbs max when the min diet is supposed to be 25 lbs!

What are those other values that are shown?

When a solution is found, you will see Shadow Prices next to each feed. A shadow price is the RANGE in price where the amount of the ingredient will not change (Given nothing else changes). For example, let's say that Corn Silage was used at 15 lbs dry matter and shows a Shadow range of 0 to $55. This means that, if nothing else changes price wise or constraint wise, the optimizer will use 15 lbs DM corn silage if the corn silage is priced between 0 and
$55. You will find some ingredients that when used will show a range of xxx to INF meaning that, regardless of price, they will be used because nothing else can provide it. For example: MET %Rqd as a constraint and Smartamine (or name your favorite by-pass MET source) may show 4,500 and INF as shadows. Since the MET constraint must be met, and there is only one source, it really doesn't matter what the max price is.

At this time if a feed is not used in the solution, then you will see shadows of 0 and INF. At this time we are not able to report the shadow prices of ingredients as they relate to when they would be used. We will be implementing this in the near future.

Below the ingredient amounts is a second table. This table lists the nutrient constraints, the original results and the optimized solution results. Then there are the two other shadow columns. It looks something like this:

	Original	Optimized	Shadow Low	Shadow High
DMI	50	50.2		x
ME %rqd	97.4	98.5	x	

The symbol itself is meaningless as in we could have used a D or a # or any symbol. So don't get hung up on the symbol itself. What is important is the column it is in. Using the example above, you see that there is a X (Shadow High) for DMI. This means that, if no other constraints change, by relaxing (raising the max) the DMI constraint, the optimizer would probably find a less expensive diet. If the X symbol is shown (Shadow Low), it means that be relaxing that constraint (reducing the min), a less expensive solution may be found. How much less expensive solution, we cannot say but it gives you directionality as to price sensitivity and nutrient constraint.

Finally:

At any time, feel free to email a farm file to Tom with an explanation of what you were trying to do. I will go through it, make it solve, and then go through with you what I did.

Do not be afraid to take a file and play with it. Just as you had to get a 'feel' for how the CPM optimizer behaved, you have to get the 'feel' for this one. Hint: as you would expect, the model (and thus the optimizer) prefers to grow microbes as a protein and amino acid source. Given the chance, it will let NFC run high (45-47% DM) with 22% peNDF. While mathematically correct, you must use your nutritional expertise and evaluate the solutions!

Just as a reminder, read the following….

So, how do we reset ourselves to thinking in CNCPS6.1 biology?

Here is a big thing to consider. In everything up till now, because of limitations in our knowledge, safety factors were 'built in'. In 6.1 biology, there are NO safety factors. If the model says most limiting milk will be 77 lbs, there is a very high probability actual milk will be between 76.5 and 77.5 lbs. Most of the time even closer! So, if you formulate for 77 lbs, will you be limiting the higher producing cow? Maybe. The whole issue of safety factors and lead feeding must be considered! Safety factors are now in your hands as the nutritionist.

So, here are our current recommendations:

1. Actual DMI should be between the CNCPS and NRC predicted intakes.
2. Ensure adequate peNDF (>22% but can vary based on herd management)

3. Ensure adequate rumen ammonia (>120%). A maximum on rumen ammonia is difficult as it partially depends on which feeds are available. I tend to watch what MUNs are doing and am targeting 8-12 mg/dl.
4. NFC: the model likes fermentable carbohydrates and NFCs are a great source. While we now say 40% is the maximum, depending on the sources and the cows, 42-43% may be acceptable.
    a. Makeup of NFC is debatable. Some people get all worked up that sugar + starch must be x, so much soluble fiber must be fed, etc. For me, I look at what is the most economical source of fermentable NFC and that varies by geographical region. In the Northeast US, it is starch so I will be at 28-32% starch. But I will be low sugar (less than 3%) and low soluble fiber.
    b. With no safety factors, availability of the NFC is a bigger concern. Corn that is not degradable does not produce microbial protein! More will be coming from this whole starch degradation area in the future!
5. MP supply: remember, we are first microbial nutritionists and then supplement the cow. Select high quality proteins and amino acids.
6. Fat: same recommendations as CPM. Total unsaturates >500 g/d are a risk factor for reducing milk fat. Watch quantity and quality of NDF. I tend to watch unsaturates % diet DM and target <3%.
7. Amino Acids: If you are going to formulate for amino acids, 6.1 biology tells us:
    a. Make sure MP balance is positive
    b. Make sure all (or majority) of amino acids are >=100% required by factorial calculations
    c. LYS %MP >6.4
    d. Now, if I am formulating for maximum milk protein, I will meet LYS and then bring in MET until the LYS:MET ratio is between 2.8 and 2.9:1
        i. This is different from the old 3:1 from CPM and represents running the same data through 6.1 biology to get the new ratios!
8. Minerals to requirements
9. Additives to recommended levels.

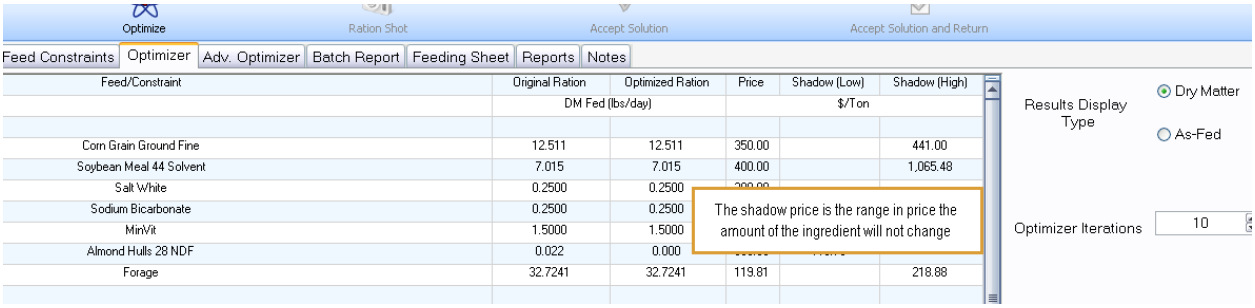
Now, how to set those safety factors?
An easy way to set the safety factors is to add at least 0.25 lbs ADG for lactating cows 3rd or greater lactation. For younger cows, add 0.25 lbs to whatever the target ADG is. This equates
to about 2 lbs of milk safety factor. Beyond that, setting the formulation safety factor is dependent upon herd management, feed quality, objectives of the farm, and milk and feed
pricing.

Millions of cattle are being fed off 6.1 biology around the world and as your experience with the newest biological model grows, so will your comfort!

(End of Guide)

12.6.3.2.4 Shadow Prices in the Linear Optimizer

The Linear Optimizer will report shadow prices for feeds considered in the recipe. When a solution is found, you will see Shadow Prices next to each feed. A shadow price is the RANGE in price where the amount of the ingredient will not change (given nothing else changes). For example, let's say that Corn Silage was used at 15 lbs dry matter and shows a Shadow range of 0 to $55. This means that, if nothing else changes price wise or constraint wise, the optimizer will use 15 lbs DM corn silage if the corn silage is priced between 0 and $55. You will find some ingredients that when used will show a range of xxx to INF meaning that, regardless of price, they will be used because nothing else can provide it. For example: MET %Rqd as a constraint and Smartamine (or name your favorite by-pass MET source) may show 4,500 and INF as shadows. Since the MET constraint must be met, and there is only one source, it really doesn't matter what the max price is.



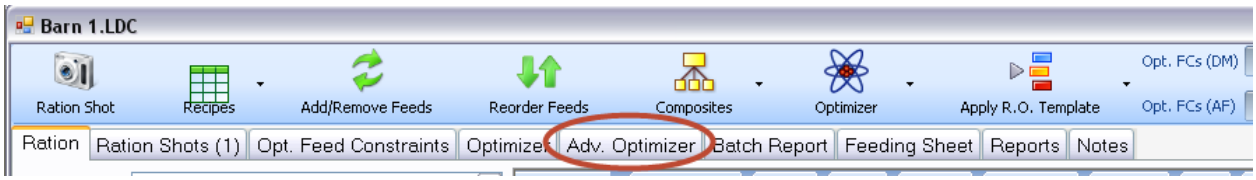
At this time if a feed is not used in the solution, then you will see shadows of 0 and INF. Presently, we are not able to report the shadow prices of ingredients as they relate to when they would be used.

Below the ingredient amounts is a second table. This table lists the nutrient constraints, the original results and the optimized solution results. Then there are the two other shadow columns. It looks like this:

nstraints | Optimizer | Adv. Optimizer | Batch Report | Feeding Sheet | Reports | Notes

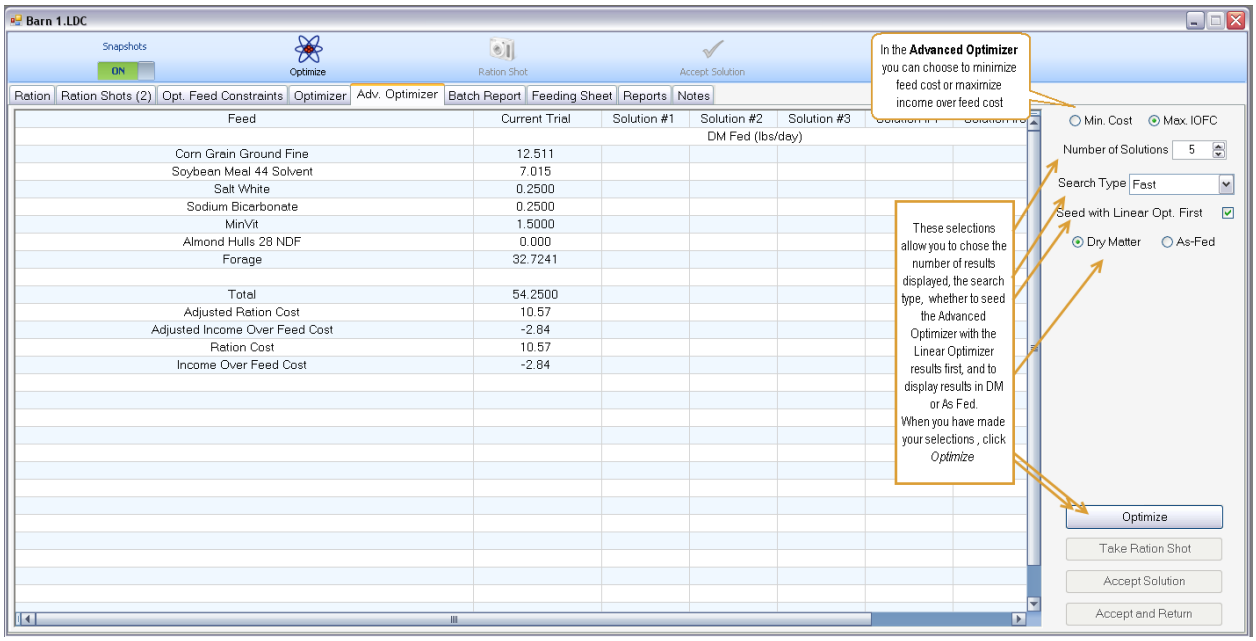
Feed/Constraint	Original Ration	Optimized Ration	Price	Shadow (Low)	Shadow (High)
	DM Fed (lbs/day)			$/Ton	
Corn Grain Ground Fine	12.511	12.511	350.00		441.00
Soybean Meal 44 Solvent	7.015	7.015	400.00		1,065.48
Salt White	0.2500	0.2500	300.00		
Sodium Bicarbonate	0.2500	0.2500	85.00		
MinVit	1.5000	1.5000	500.00		
Almond Hulls 28 NDF	0.022	0.000	330.00	115.79	
Forage	32.7241	32.7241	119.81		218.88
Total	54.2721	54.2500			
Ration Cost	10.57	10.57			
Income Over Feed Cost	1.24	1.24			
Dry Matter Intake (lbs/day)	54.27	54.25			X
ME (%Rqd)	104.27	104.23		X	
MP (%Rqd)	99.03	99.01		X	
NFC (%DM)	39.89	39.88			
peNDF (%DM)	22.85	22.85			

The symbol itself is meaningless as in we could have used a D or a # or any symbol. So don't get hung up on the symbol itself. What is important is the column it is in. Using the example above, you see that there is a X (Shadow High) for DMI. This means that, if no other constraints change, by relaxing (raising the max) the DMI constraint, the optimizer would probably find a less expensive diet. If the X symbol is shown (Shadow Low), it means that be relaxing that constraint (reducing the min), a less expensive solution may be found. How much less expensive solution, we cannot say, but it gives you direction-ality as to price sensitivity and nutrient constraint.

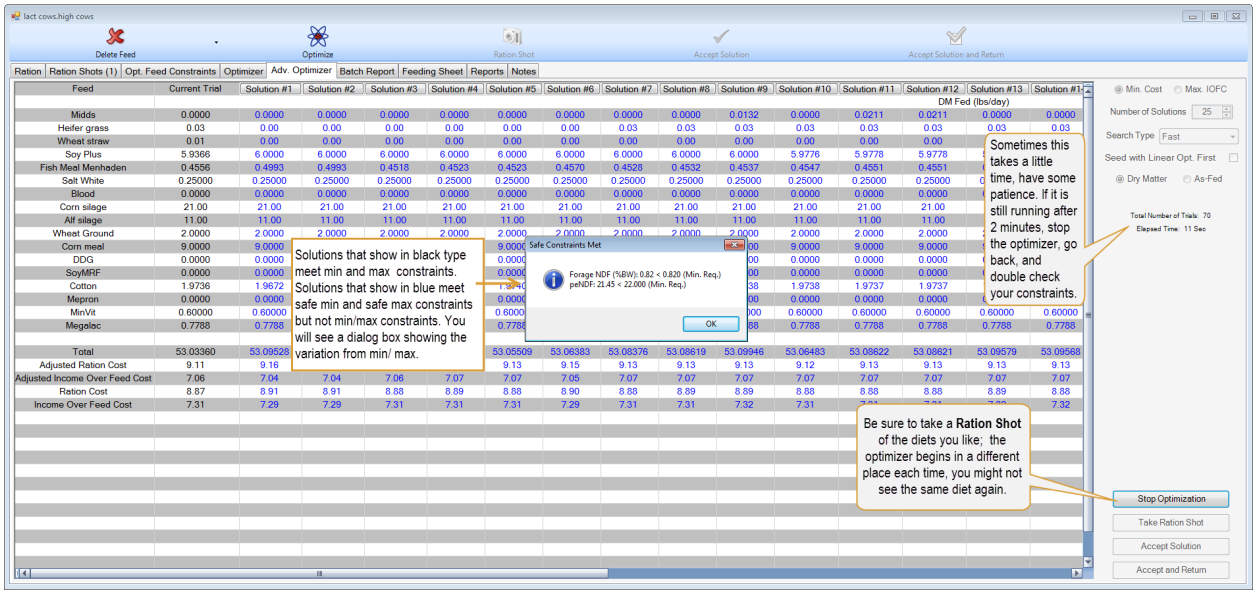


12.6.4 Non-linear (Advanced Optimizer)

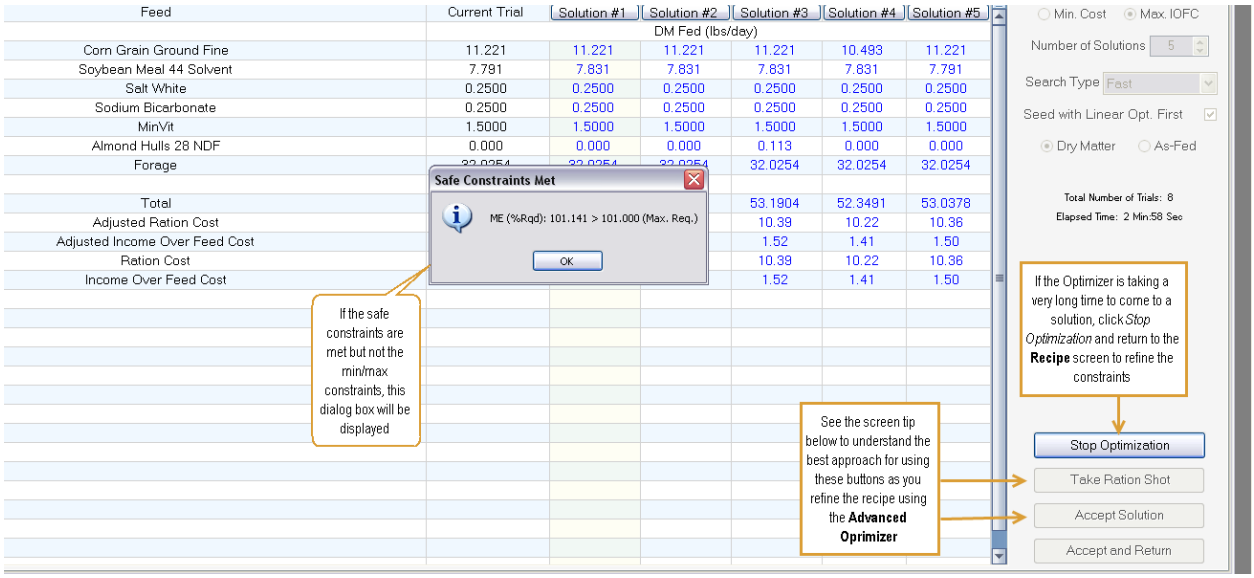
Click on the Adv. Optimizer tab on the Recipe Screen.



Due to the non-linear nature of the algorithm, you could get a different result each time you optimize. Be sure to take a ration shot of the diets that you like because they might not show up again. You can choose to replace your entered recipe with the optimized diet.


lact cows.high cows
Delete Feed
Optimize
Ration Shot
Accept Solution
Accept Solution and Return
Ration
Ration Shots (1)
Opt. Feed Constraints
Optimizer
Adv. Optimizer
Batch Report
Feeding Sheet
Reports
Notes
Feed
Current Trial
DM Fed (lbs/day)
Solutions that show in black type meet min and max constraints. Solutions that show in blue meet safe min and safe max constraints but not min/max constraints. You will see a dialog box showing the variation from min/ max.
Safe Constraints Met
Forage NDF (%BW): 0.82 < 0.820 (Min. Req.)
peNDF: 21.45 < 22.000 (Min. Req.)
OK
Sometimes this takes a little time, have some patience. If it is still running after 2 minutes, stop the optimizer, go back, and double check your constraints.
Be sure to take a Ration Shot of the diets you like; the optimizer begins in a different place each time, you might not see the same diet again.
Stop Optimization
Take Ration Shot
Accept Solution
Accept and Return

Evaluate the Results


Feed
Current Trial
Solution #1
Solution #2
Solution #3
Solution #4
Solution #5
DM Fed (lbs/day)
Corn Grain Ground Fine
Soybean Meal 44 Solvent
Salt White
Sodium Bicarbonate
MinVit
Almond Hulls 28 NDF
Forage
Total
Adjusted Ration Cost
Adjusted Income Over Feed Cost
Ration Cost
Income Over Feed Cost
Safe Constraints Met
ME (%Rqd): 101.141 > 101.000 (Max. Req.)
OK
If the safe constraints are met but not the min/max constraints, this dialog box will be displayed
Min. Cost
Max. IOFC
Number of Solutions
Search Type
Fast
Seed with Linear Opt. First
Dry Matter
As-Fed
Total Number of Trials: 8
Elapsed Time: 2 Min:58 Sec
If the Optimizer is taking a very long time to come to a solution, click Stop Optimization and return to the Recipe screen to refine the constraints
See the screen tip below to understand the best approach for using these buttons as you refine the recipe using the Advanced Oprimizer
Stop Optimization
Take Ration Shot
Accept Solution
Accept and Return

Does the Optimizer reach a solution? If not, what constraints are not met? If the solution meets all of the min/max constraints, the window at the bottom of the screen will read "This solution meets all the specified constraints." If the problem is solvable within the "safe" limits, you will see in the lower left corner constraints that failed to meet nutrient constraints but are very close. Some of this is because an ingredient (let's say sodium selenite) may be used at the fifth or sixth decimal in the optimizer but on screen, you may only be using three or four decimals. Thus, when the solution is 'dropped back in' the model, the fifth decimal disappears.

Does it look like a reasonable diet? To re-run the optimizer, either change a constraint, take a ration shot, or accept the solution. Once this is done, you can run it again. The solution may be different but do NOT WORRY about this. You must remember, there is no one perfect solution in a non-linear problem. Rather, there are multiple solutions that may give the same cost or meet the same constraints with slightly different values. Manually iterating three or four times maybe a good option to try and converge as closely as possible. Just take your original diet, do a Ration Shot™, Optimize, do a Ration Shot™, etc. And then you can select the one you believe to be most desirable from the Ration Shots™ screen. We have heard from users that in certain types of diets, as many as 8 iterations are required. Thus, we encourage to spend some time playing with a few diets to determine how many iterations you feel comfortable with.

12.6.4.1 Advanced Optimization Strategies

This section is meant to explain how the optimizer works and some hints/suggestions to making the optimizer(s) perform.

Optimization tends to be a subject of great debate. The optimization AMTS as implemented reflects a nutritionist's thinking instead of a pure mathematician/programmer's thinking. A mathematician will say that if a nutrient is constrained to be between 100 and 110% of required, anything outside that range fails to meet the constraint. A nutritionist will say, 'well, if it can find a solution at 99%, that's close

enough'. That is the approach taken in AMTS products. This is done with a proprietary method and as you work with the optimizer, you may find you want to change your constraints to add an additional "safety factor". The optimization routine is a tool. The final diet decisions are at the discretion of the nutritionist.

Two resources are available to you with in the program. The **Optimizer Flow Chart**

and the **Optimizer Guide**

. The documents are found on pages 74 and 75 of this guide as well as through the **Optimizer** screen.

12.6.4.2 Mathematical Approach

AMTS optimization equations minimize ration feed cost subject to user defined nutrient and feed ingredient quantity constraints. These equations are linear. For example, let's use something like crude protein as a constraint. Crude protein content of a feed does not change with different diets or combinations of ingredients. Thus, the linear optimizer knows that for every increment it adds of this feed, so much protein will be added to meet the crude protein constraint.

The CNCPS model equations, that AMTS products are based on, are not linear. Feed ME and MP values are not constants. They vary based on diet, level of intake, and other feeds that may impact their digestibility. Think of driving up a hill. A linear hill means that the slope is constant. A non-linear hill though would mean we drive so far at one slope and then the hill gets steeper and steeper. A pure linear optimizer fails with these problems. That doesn't mean linear won't work though. Curve peeling can be used to look at small portions of the curve and through iterative processes, find a good solution. AMTS utilizes a linear optimizer with a curve peeling approach.

12.6.4.3 Safety Factors

Here is a big thing to consider. In everything up till now, because of limitations in our knowledge, safety factors were 'built in'. In 6.1 biology, there are NO safety factors. If the model says most limiting milk will be 77 lbs, there is a very high probability actual milk will be between 76.5 and 77.5 lbs. Most of the time even closer! So, if you formulate for 77 lbs, will you be limiting the higher producing cow? Maybe. The whole issue of safety factors and lead feeding must be considered! Safety factors are now in your hands as the nutritionist.

So, here are our current recommendations:

- Actual DMI should be between the CNCPS and NRC predicted intakes.
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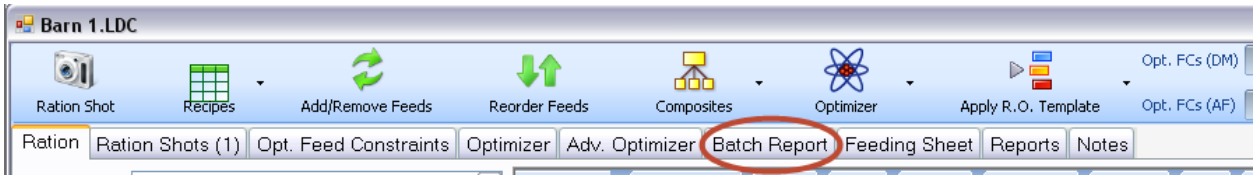
- Makeup of NFC is debatable. Some people get all worked up that sugar + starch must be x, so much soluble fiber must be fed, etc. For me, I look at what is the most economical source of fermentable NFC and that varies by geographical region. In the Northeast US, it is starch so I will be 28-32% starch. But I will be low sugar (less then 3%) and low soluble fiber.
- with no safety factors, availability of the NFC is a bigger concern. Corn that is not degradable doesn't produce microbial protein! More will be coming from this whole starch degradation area in the future!
- MP supply: remember, we are first microbial nutritionists and then supplement the cow. Select high quality proteins and amino acids.
- Fat: same recommendations as CPM. Total unsaturates >500 g/d are a risk factor for reducing milk fat. Watch quantity and quality of NDF. I tend to watch unsaturates %diet DM and target <3%.
- Amino Acids: If you are going to formulate for amino acids, 6.1 biology tells us:
  - Make sure MP balance is positive
  - Make sure all (or majority) of amino acids are >=100% required by factorial calculations
  - LYS %MP >6.4

  now, if I am formulating for maximizing milk protein, I will meet LYS and then bring in MET until the LYS:MET ratio is between 2.8 and 2.9:1. This is different then the old 3:1 from CPM and represents running the same data through 6.1 biology to get the new ratios!
- Minerals to requirements
- Additives to recommended levels.

12.6.4.4 How do I set the safety factors?

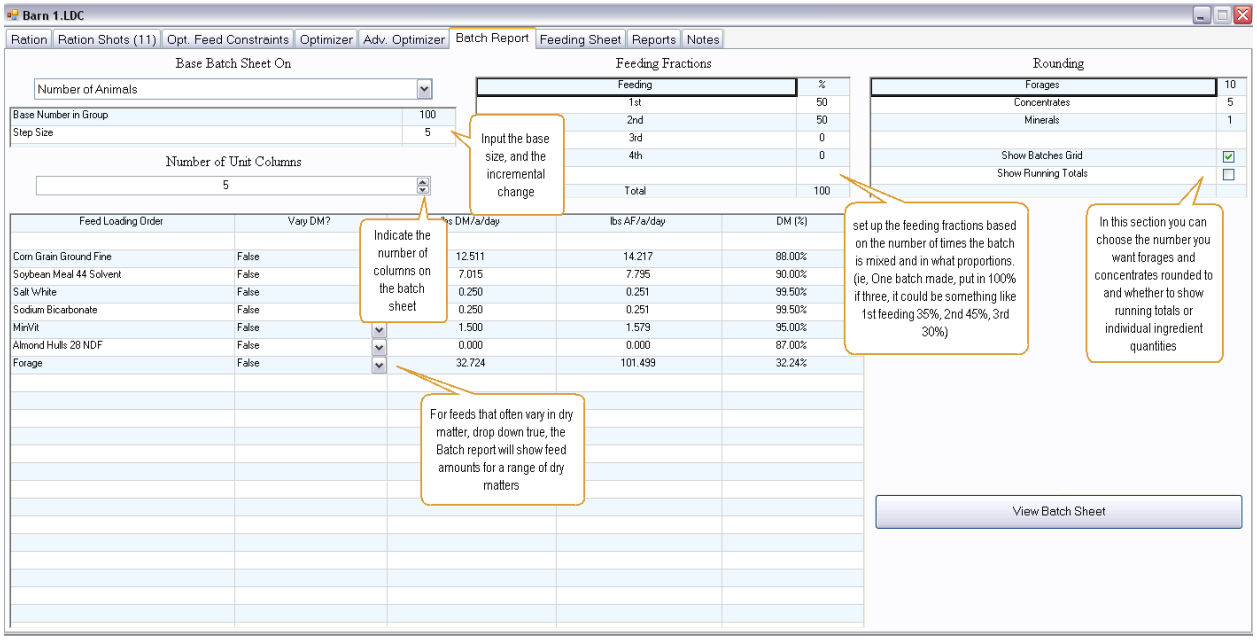
An easy way to set the safety factors is to add at least 0.25 lbs ADG for lactating cows 3rd or greater lactation. For younger cows, add 0.25 lbs to whatever the target ADG is. This equates to about 2 lbs of milk safety factor. Beyond that, setting the formulation safety factor is dependent upon herd management, feed quality, objectives of the farm, and milk and feed pricing.



12.6.5 Batch Report

This tab allows you to set up your inputs so that you can then generate a **Batch Report** that you can print for the person responsible for feeding on your farm. In this window you establish how you want the information displayed on the **Batch Report Sheet**

The **Batch Report Sheet** can be created in terms on number of animals or size of Batch. First the screen in terms of number of animals:



The entries in the batch report screen (above) results in the batch report (below):

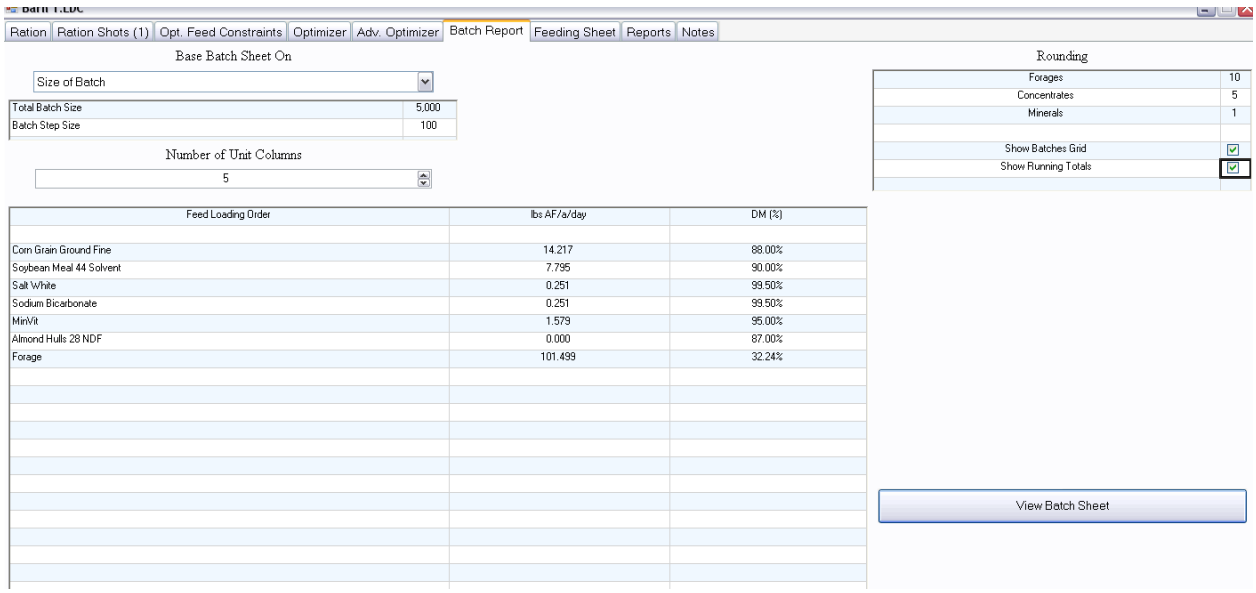
AMTS

Mariann FessendenSaturday, September 29, 2012

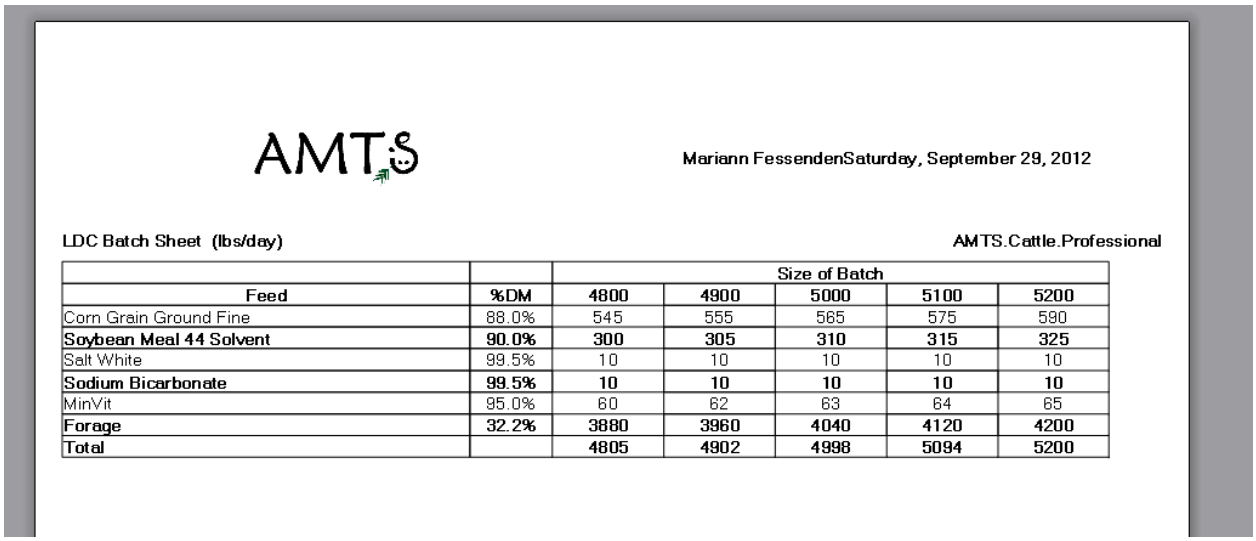
LDC Batch Sheet - Feeding #1 (50%) (lbs/day) AMTS.Cattle.Professional

		Number of Animals				
Feed	**%DM**	**90**	**95**	**100**	**105**	**110**
Corn Grain Ground Fine	88.0%	640	675	710	745	780
Soybean Meal 44 Solvent	**90.0%**	**350**	**370**	**390**	**410**	**430**
Salt White	99.5%	11	12	13	13	14
Sodium Bicarbonate	**99.5%**	**11**	**12**	**13**	**13**	**14**
MinVit	95.0%	71	75	79	83	87
Forage	**32.2%**	**4570**	**4820**	**5070**	**5330**	**5580**
Total		**5653**	**5964**	**6275**	**6594**	**6905**

In terms of Batch size:



Which results in this Batch Report

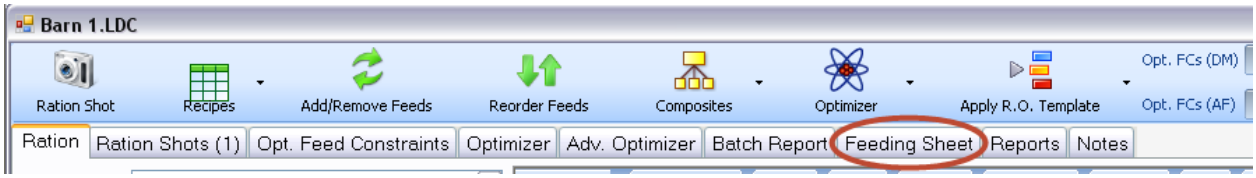


AMTS

Mariann FessendenSaturday, September 29, 2012

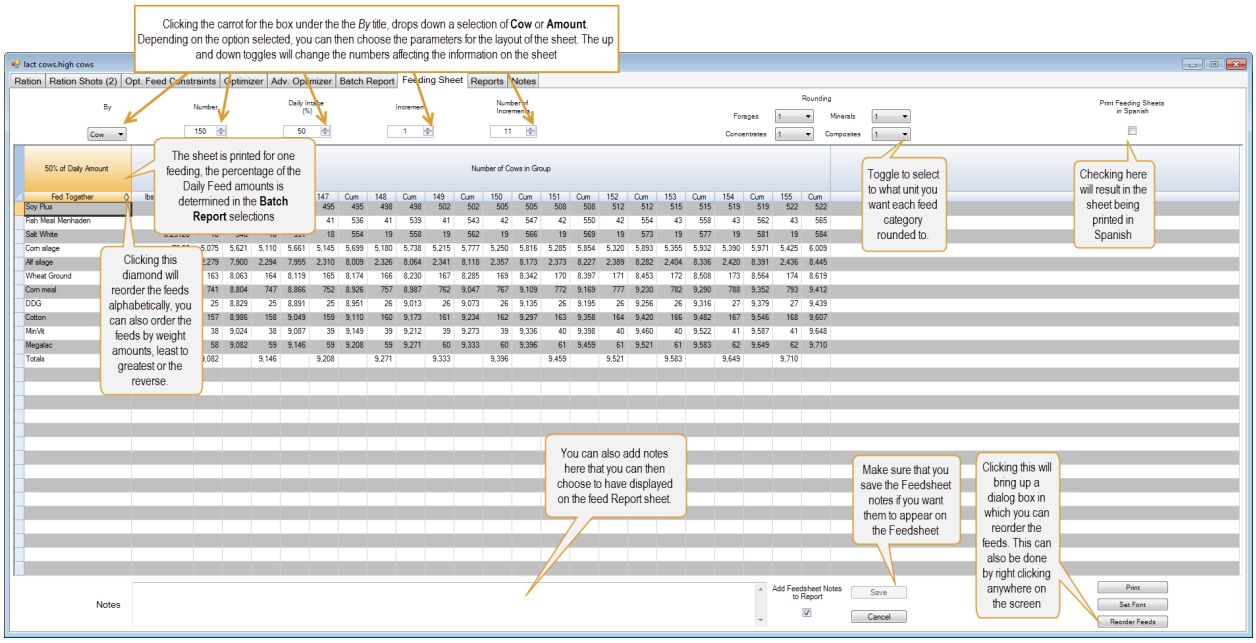
LDC Batch Sheet (lbs/day) AMTS.Cattle.Professional

		Size of Batch				
Feed	%DM	4800	4900	5000	5100	5200
Corn Grain Ground Fine	88.0%	545	555	565	575	590
Soybean Meal 44 Solvent	**90.0%**	**300**	**305**	**310**	**315**	**325**
Salt White	99.5%	10	10	10	10	10
Sodium Bicarbonate	**99.5%**	**10**	**10**	**10**	**10**	**10**
MinVit	95.0%	60	62	63	64	65
Forage	**32.2%**	**3880**	**3960**	**4040**	**4120**	**4200**
Total		**4805**	**4902**	**4998**	**5094**	**5200**

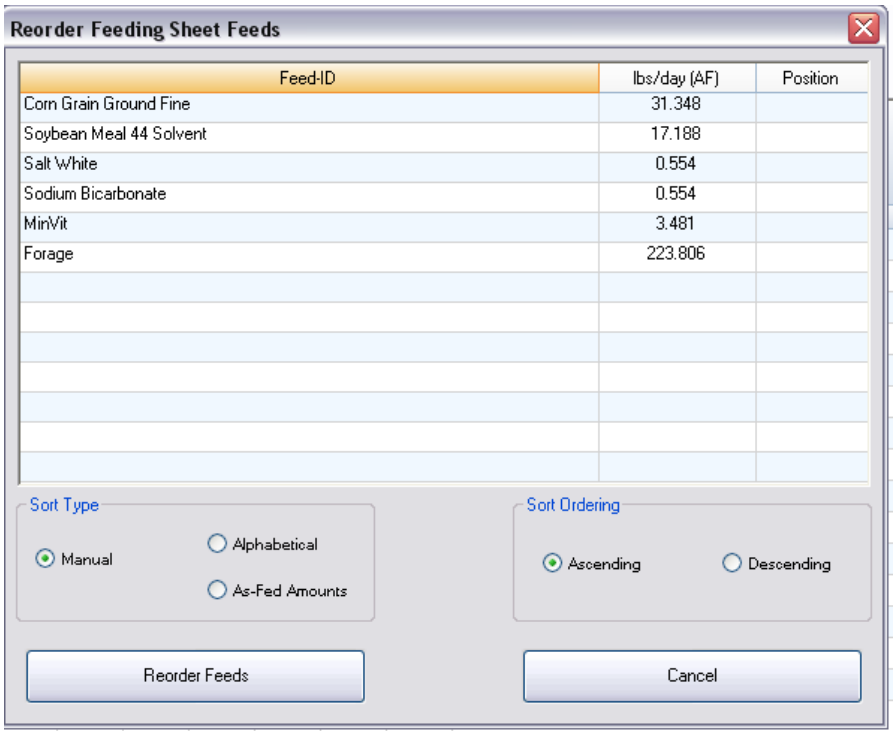


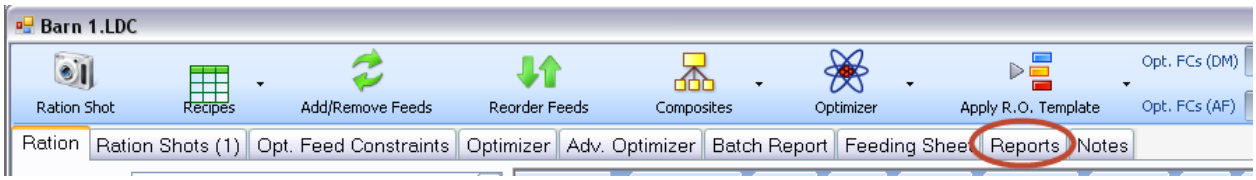
12.6.6 Feeding Sheet

The feeding sheet has the same function as the batch report but allows more flexibility in customizing its format. The Feeding Sheet can also be printed in Spanish. Quantities fed can be set by the number of animals or by the amount fed. Feed amounts can be rounded based on the type of feed. For example, you might set forage amounts to be rounded to the closest 5 lbs and minerals to be fed to the closest .01 lbs using the drop down menu next to Forages / Minerals / Concentrates / Composites.


Clicking the carrot for the box under the the By title, drops down a selection of Cow or Amount. Depending on the option selected, you can then choose the parameters for the layout of the sheet. The up and down toggles will change the numbers affecting the information on the sheet
The sheet is printed for one feeding, the percentage of the Daily Feed amounts is determined in the Batch Report selections
Clicking this diamond will reorder the feeds alphabetically, you can also order the feeds by weight amounts, least to greatest or the reverse.
Toggle to select to what unit you want each feed category rounded to.
Checking here will result in the sheet being printed in Spanish
You can also add notes here that you can then choose to have displayed on the feed Report sheet.
Make sure that you save the Feedsheet notes if you want them to appear on the Feedsheet
Clicking this will bring up a dialog box in which you can reorder the feeds. This can also be done by right clicking anywhere on the screen

The Reorder feeds button displays a screen that allows you to select the order that the feeds in the report are shown on the feeding sheet.





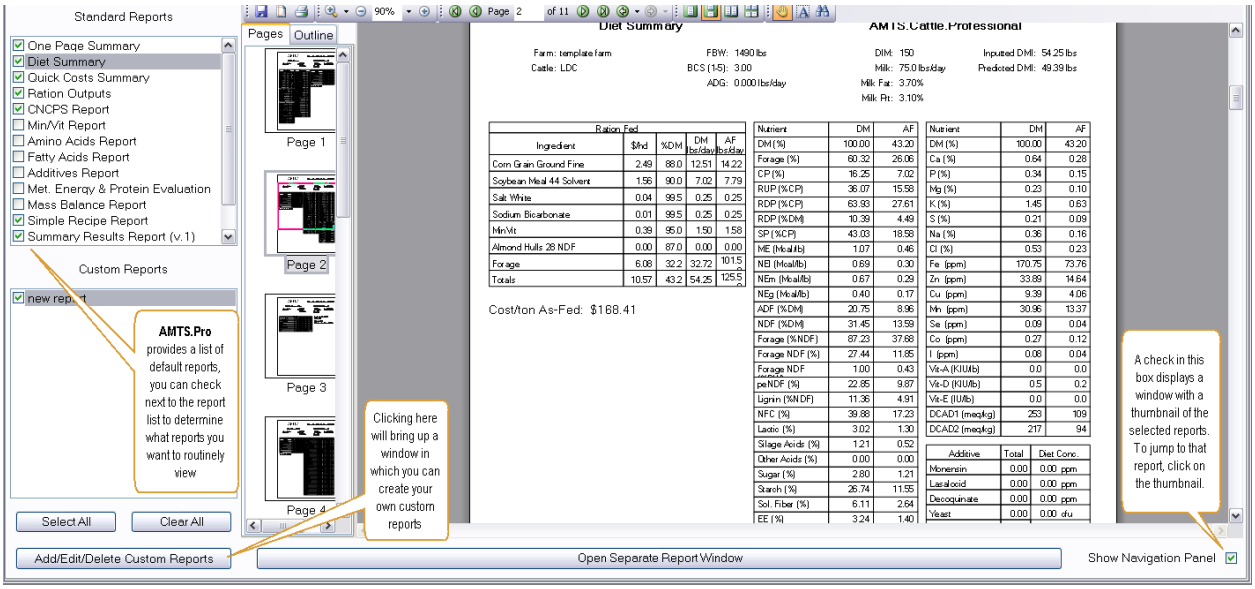
12.6.7 Reports

AMTS.Pro contains a comprehensive list of reports.

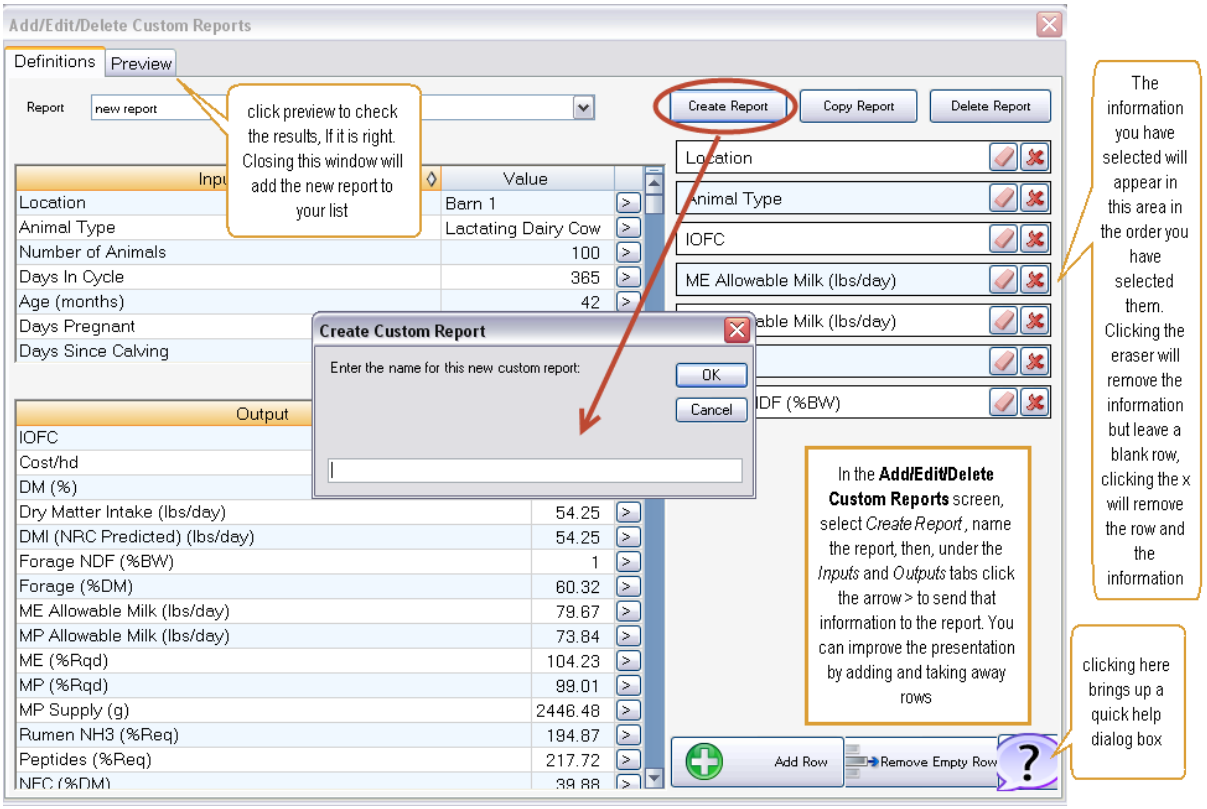
You can set up the default reports to show or print and select the information presented.

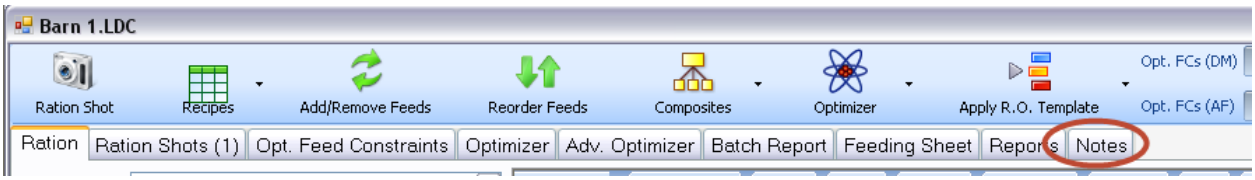
- **Report Selection Window:** in the window on the left side of the screen check the reports that you routinely want to see or print. These setting will stay the same even when you open other farm files. The “Select All” “Clear All” buttons at the bottom of the window will select or clear all the checks in the window.

- **Print, Save, View Options:** Windows Save, Page Setup, Print and View options are displayed as icons on the top of the report window. With any report, you have the option of either printing or saving the report as a file (pdf, Excel, html).


Standard Reports
One Page Summary
Diet Summary
Quick Costs Summary
Ration Outputs
CNCPS Report
Min/Vit Report
Amino Acids Report
Fatty Acids Report
Additives Report
Met. Energy & Protein Evaluation
Mass Balance Report
Simple Recipe Report
Summary Results Report (v.1)
Custom Reports
new report
AMTS.Pro provides a list of default reports, you can check next to the report list to determine what reports you want to routinely view
Select All
Clear All
Pages
Outline
Page 1
Page 2
Page 3
Page 4
Clicking here will bring up a window in which you can create your own custom reports
Diet Summary
AMTS.Cattle.Professional
Add/Edit/Delete Custom Reports
Open Separate Report Window
Show Navigation Panel
A check in this box displays a window with a thumbnail of the selected reports. To jump to that report, click on the thumbnail.

Add/Edit/Delete Custom Report



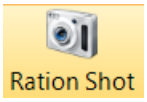


12.6.8 Notes

This section supplies a handy location for your personal notes about the program If you add notes and save them. A Recipe Notes Report will appear in the Reports section. You can choose to print, email, save these notes. They will pertain to that specific Recipe and Group.

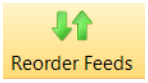
13.0 Other Recipe Screen Icons

The following tabs help navigate the ration formulation and optimization process:



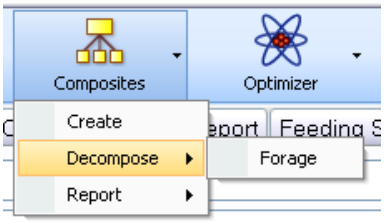
Takes a Ration Shot of the current recipe (see page 68).

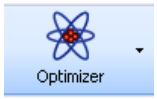
Brings up a list of feeds available for this group. Add or remove feeds to be included in the ration.



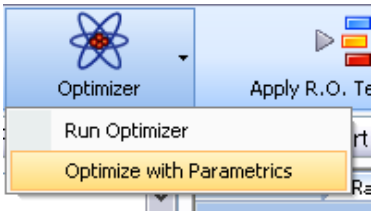
Reorders the list of feeds in the ration. This is also the order that the feeds will be listed in the batch report.

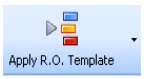
Composites are feed mixes. See page 54 for details about creating and working with a composite. Also note that the carrot next to the Composite icon can be clicked to bring up a quick menu in which you can separate the composite into its component parts. This is useful when the composite is something like a TMR or Forage. Also, see the section below on page 93 for more information about composites.



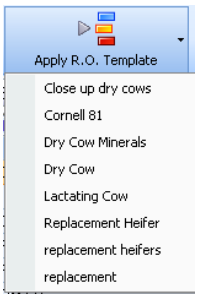


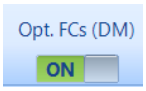
Clicking the carrot beside the Optimizer icon will drop down a menu that provides the opportunity to run the linear Optimizer from the recipe screen. You may also select the *Optimize with Parametrics* (explanation on pg 85)



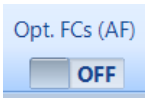


Clicking the carrot beside this icon will provide a menu of the templates you developed in the **Settings** tab / **Ration Output Templates** as explained on page 18. Selecting from the drop down selection will refine your outputs for the specific group you are working with.

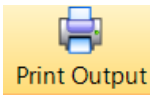




When set to "ON", the optimizer feed constraints (in Dry Matter units fed per day) and feed prices are displayed and can be edited on the ration screen.

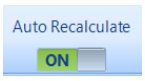


When set to "ON", the optimizer feed constraints (in As Fed units fed per day) and feed prices are displayed and can be edited on the ration screen (left window).



Brings a report corresponding to the Recipe Output Window tab displayed up in Preview Mode. You can then view, print or save the report(s). Reports can be saved as a pdf, Microsoft Word document or Excel spreadsheet.

Slide this button if you want to turn off the **Snapshot** feature on the recipe inputs side of the screen. Doing this will free up more screen space for the ration outputs.



When set to "ON", the ration computations in the window on the right side of the screen will be updated each time a value is entered. The program will run faster when the auto-recalculate is set to "off". To recalculate the computations when the auto-recalculate is off, click on the "Recalc" icon at the top of the screen.

14.0 Composites

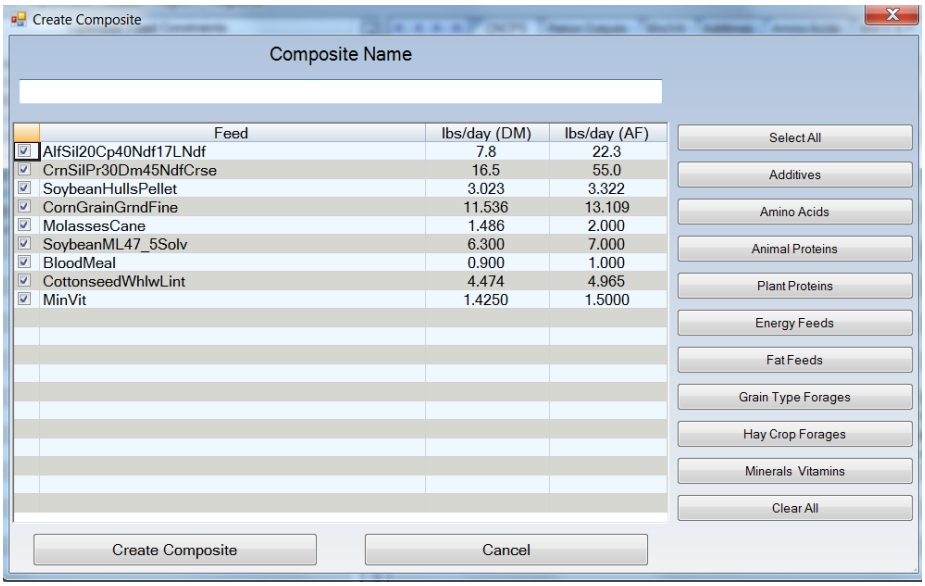
AMTS has adopted Composites as a term for mixes. Composites in **AMTS.Cattle™** are a complex programming issue. On the screen, composites simply combine feeds; however, in the background, **AMTS.Cattle™** is treating every ingredient in a composite as an individual ingredient. This is done to ensure predictions remain the same regardless of working with the individual feeds or with composites. Composites can be multiple layers deep (that is, a composite within a composite, or for example: a micro-mix within a pre-mix within a TMR) and the predicted results are consistent throughout. This represents a very big difference from CPM Dairy. CPM Dairy utilizes a simple weighted average for most nutrients and attempts to calculate other mix inputs. This is why CPM calculates different results when individual feeds are used versus those same feeds in a mix.

Recipes are named using an inputted composite name (e.g. Protein Mix) and then a feed ID is assigned using Cxxxxx where xxxxxx represents the current date/time.

You can create a composite from the **Recipe** Screen or from the **Composite** Screen:

14.1 Creating Composites from the Recipe Screen

Once a ration is formulated to a desired level, you can create a composite from any of the feeds fed in that ration or if you need you can pull more feeds in from the main library by clicking on the plus. Right-click on the left pane of the Ration form (as if creating a new ration) and select Create Composite from This Recipe.



A new dialog box appears listing the feeds in the recipe. By default, feeds with an amount greater than zero are automatically selected. This was done as the default because most of the time, the number of feeds to deselect from a recipe is less than the number of feeds in a composite. Remove the check mark from the feeds you do not want in the composite (using your mouse), enter a Composite Name and then click on the Create Composite button. You will be returned to the ration screen.

On the ration screen the new composite name is in the ration feed list and the feeds in the ration that are part of the composite are removed from the feed list. Any composite can be easily recognized on the ration screen as the text of the composite name is in a different color than the other feeds. If you left click on the composite, you will see this drop down menu:

Decompose '*Feed*' means that the composite reverts to its component ingredients in the ration feed file.

Edit '*Feed*' brings up the Composite Screen, allowing you to change the amounts and feed ingredients in the composite.

When you add an ingredient using this method, the composite structure is updated and, by default, the new ingredient is added with zero inclusion rate. Enter the feeding rate for this new ingredient and you will notice that the total amount of the composite fed is updated. For example, if ground corn is fed as an ingredient outside a composite and the producer now wants to add the ground corn to the composite:

Step 1. Add ground corn to the composite using the above method.

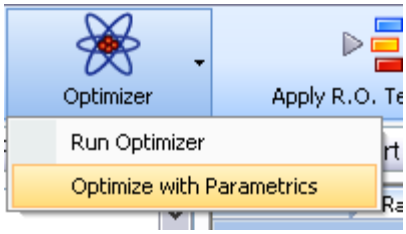
Step 2. Enter the amount of ground corn in the composite (DM or AF).

Step 3. Change the ground corn recipe inclusion rate (ie the ground corn outside the composite) to zero.

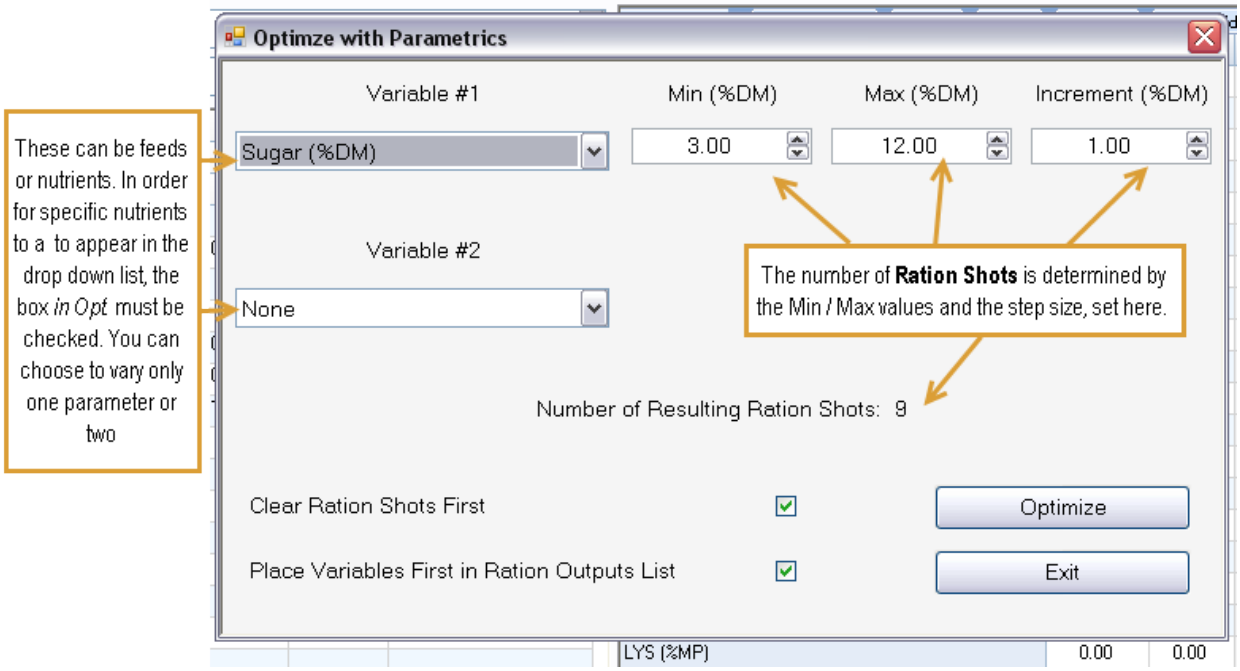
15.0 Optimize with Parametrics

This is an optimization method that allows you to vary nutrient or feed constraints giving an opportunity to evaluate the ration sensitivity to nutrient constraints and ingredient availability.

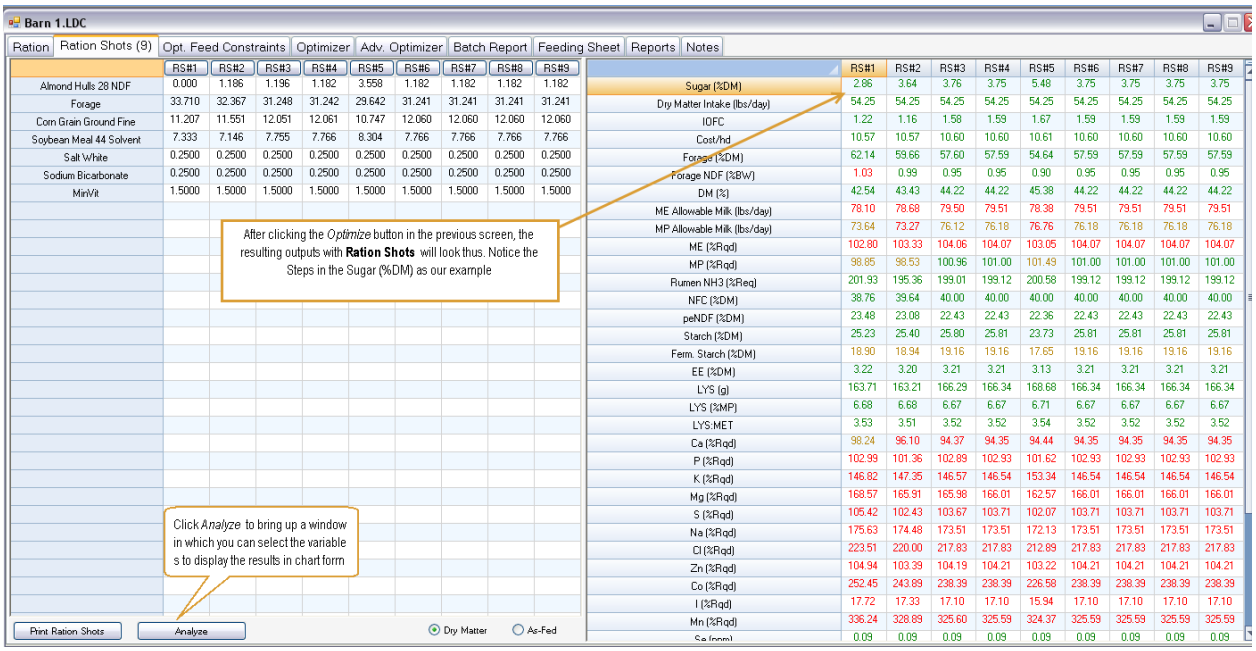
To begin select *Optimize with Parametrics* from the *Optimizer* button in the **Recipe** screen.



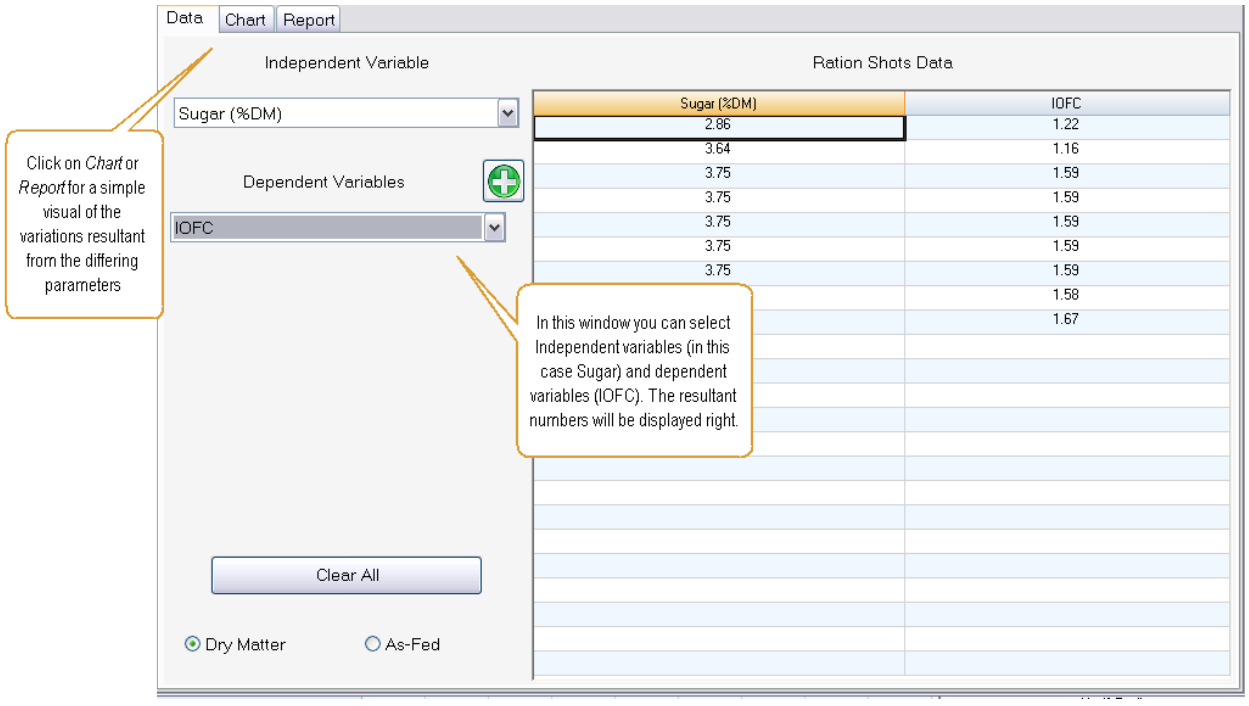
This dialog box will appear:

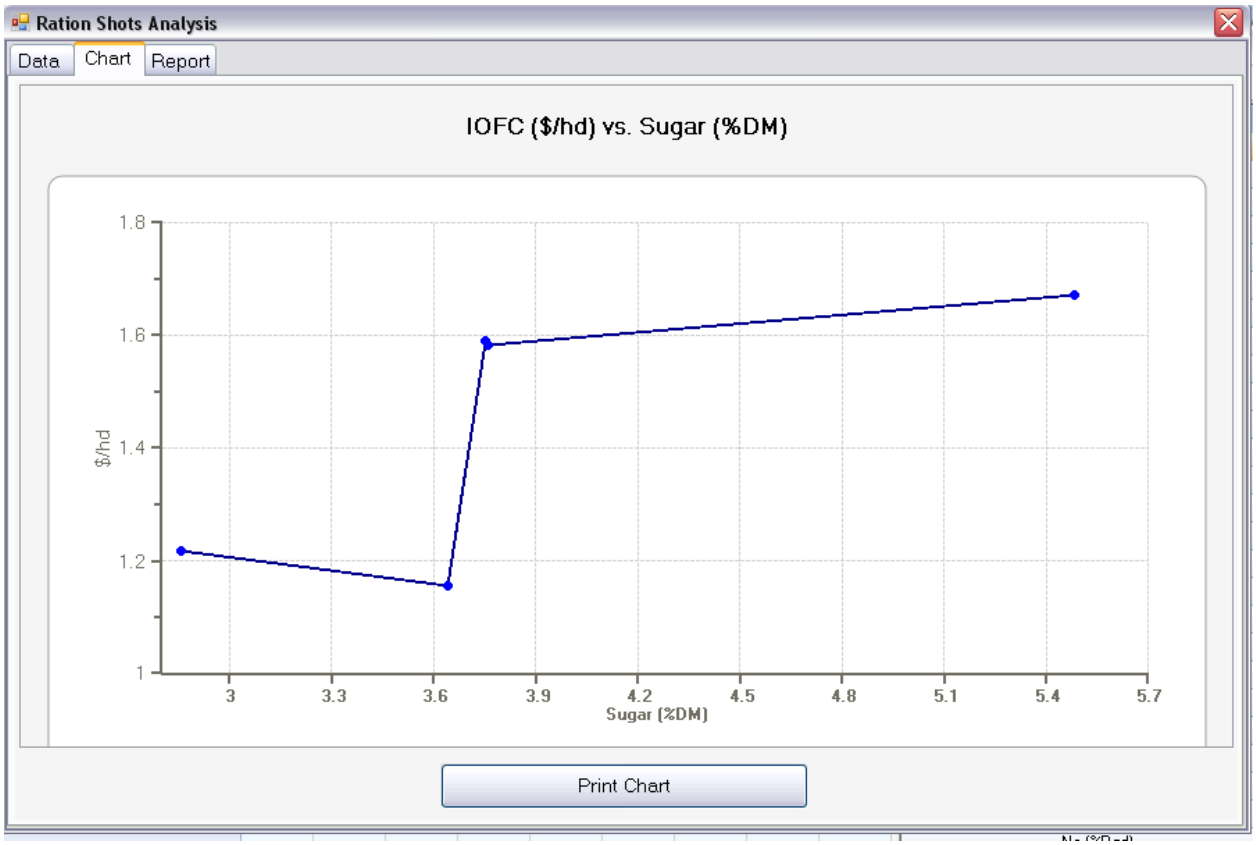

Optimze with Parametrics
Variable #1
Min (%DM)
Max (%DM)
Increment (%DM)
Sugar (%DM)
3.00
12.00
1.00
Variable #2
None
These can be feeds or nutrients. In order for specific nutrients to a to appear in the drop down list, the box *in Opt* must be checked. You can choose to vary only one parameter or two
The number of **Ration Shots** is determined by the Min / Max values and the step size, set here.
Number of Resulting Ration Shots: 9
Clear Ration Shots First
Optimize
Place Variables First in Ration Outputs List
Exit
LYS (%MP)
0.00
0.00

The number of **Ration Shots** will be determined by the step size of the variables. If you were to have two variables the shots would be a product of the two; you can get a lot of **Ration Shots** very quickly, so be aware!


Barn 1.LDC
Ration
Ration Shots (9)
Opt. Feed Constraints
Optimizer
Adv. Optimizer
Batch Report
Feeding Sheet
Reports
Notes
After clicking the Optimize button in the previous screen, the resulting outputs with Ration Shots will look thus. Notice the Steps in the Sugar (%DM) as our example
Click Analyze to bring up a window in which you can select the variable s to display the results in chart form
Print Ration Shots
Analyze
Dry Matter
As-Fed

In the **Analyze** screen


Data
Chart
Report
Independent Variable
Sugar (%DM)
Dependent Variables
IOFC
Ration Shots Data
Sugar (%DM)
IOFC
Click on Chart or Report for a simple visual of the variations resultant from the differing parameters
In this window you can select Independent variables (in this case Sugar) and dependent variables (IOFC). The resultant numbers will be displayed right.
Clear All
Dry Matter
As-Fed

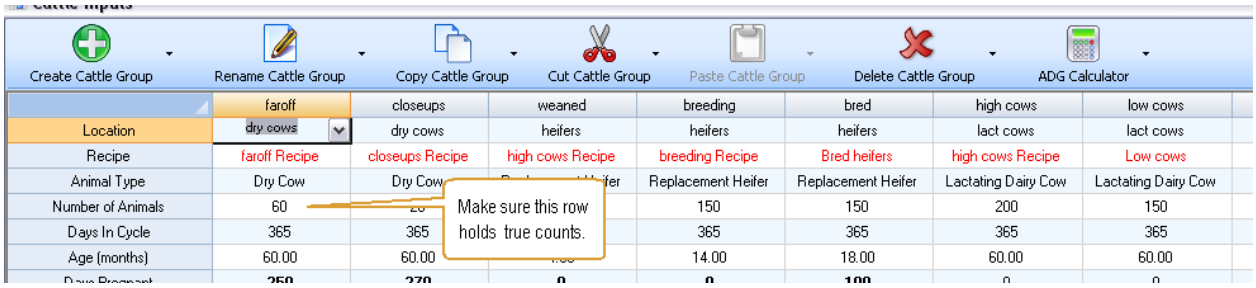


This can be a powerful tool for presenting if/then scenarios on the farm.

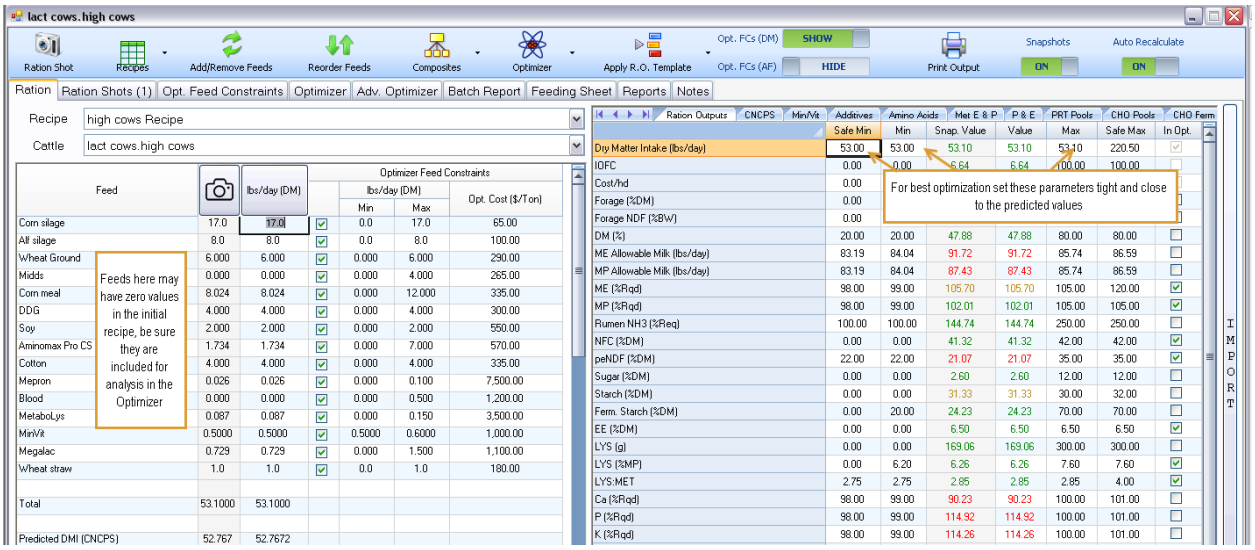
16.0 Inventory and Multi-Group Optimization

This feature of **AMTS.Pro** provides a tool with which users can easily track, forecast, and manage inventories for each feed. This is especially helpful in times when inventories are constrained and margins are tight. It allows for optimization across multiple groups and can use inventory as an optimizing constraint.

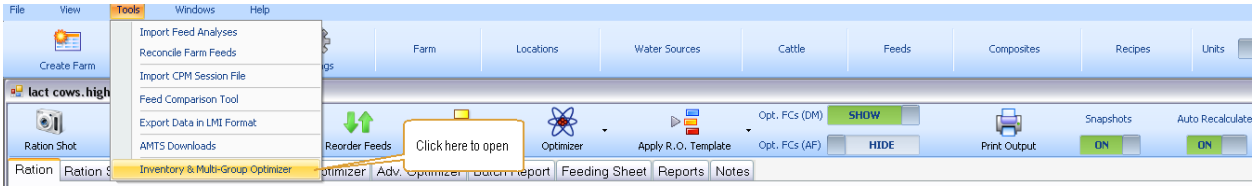
Step 1. To begin Inventory and Multi-Group Optimization, first open the **Cattle** screen and make sure the number of animals in each group is reflective of the actual numbers in each group.



Step 2. In the **Recipe** screen, for each Recipe, set the nutrient and feed constraints you wish to use. You may want to include feeds you are not normally offering to that group (for example, low quality hay to high producing cows) and let the optimizer decide how it could be used.

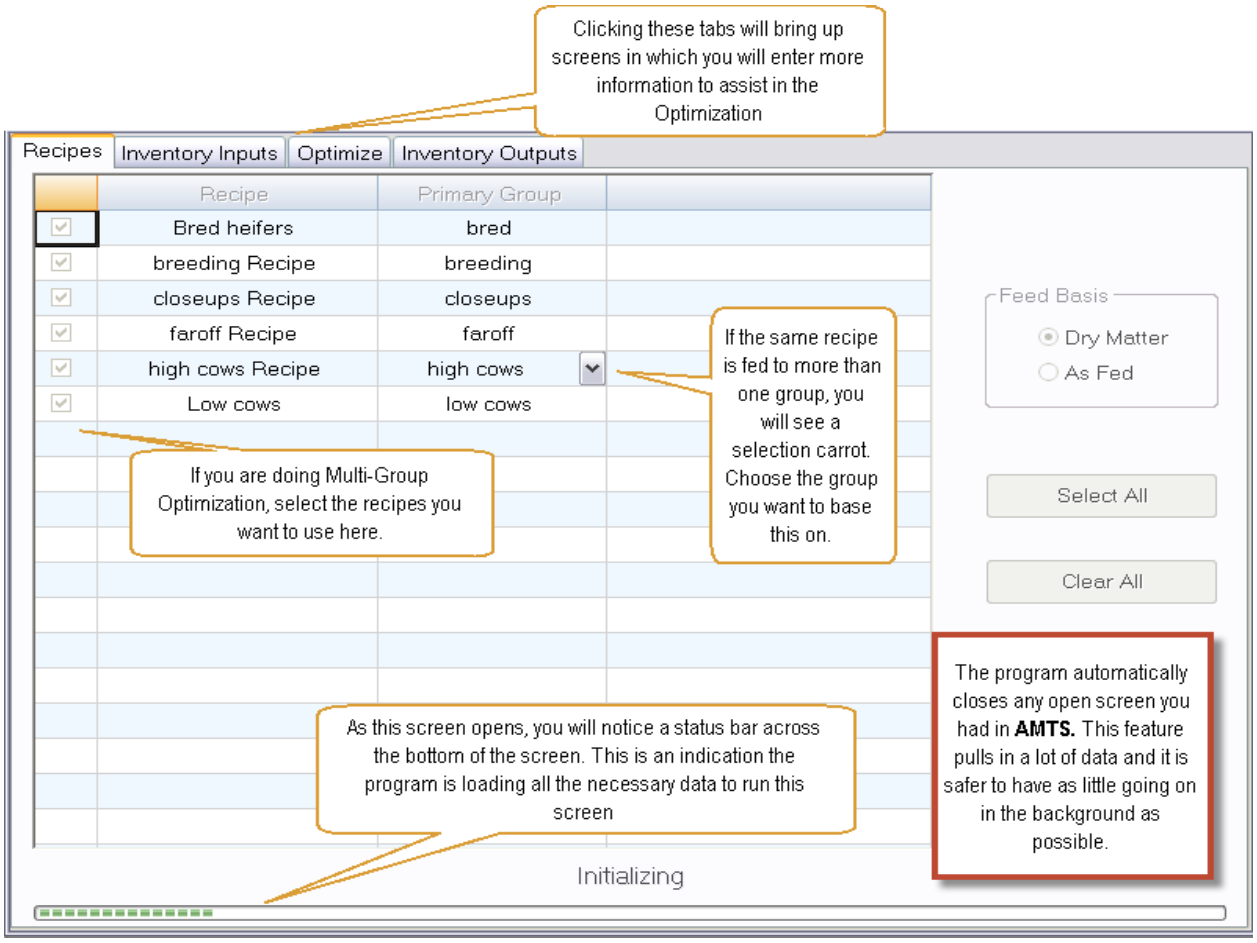

lact cows.high cows
Ration Shot
Recipes
Add/Remove Feeds
Reorder Feeds
Composites
Optimizer
Apply R.O. Template
Opt. FCs (DM)
SHOW
Opt. FCs (AF)
HIDE
Print Output
Snapshots
ON
Auto Recalculate
ON
Ration
Ration Shots (1)
Opt. Feed Constraints
Optimizer
Adv. Optimizer
Batch Report
Feeding Sheet
Reports
Notes
Recipe
high cows Recipe
Cattle
lact cows.high cows
Feed
lbs/day (DM)
Optimizer Feed Constraints
lbs/day (DM)
Min
Max
Opt. Cost ($/Ton)
Corn silage 17.0 17.0 0.0 17.0 65.00
Alf silage 8.0 8.0 0.0 8.0 100.00
Wheat Ground 6.000 6.000 0.000 6.000 290.00
Midds 0.000 0.000 0.000 4.000 265.00
Corn meal 8.024 8.024 0.000 12.000 335.00
DDG 4.000 4.000 0.000 4.000 300.00
Soy 2.000 2.000 0.000 2.000 550.00
Aminomax Pro CS 1.734 1.734 0.000 7.000 570.00
Cotton 4.000 4.000 0.000 4.000 335.00
Mepron 0.026 0.026 0.000 0.100 7,500.00
Blood 0.000 0.000 0.000 0.500 1,200.00
MetaboLys 0.087 0.087 0.000 0.150 3,500.00
MinVit 0.5000 0.5000 0.5000 0.6000 1,000.00
Megalac 0.729 0.729 0.000 1.500 1,100.00
Wheat straw 1.0 1.0 0.0 1.0 180.00
Total 53.1000 53.1000
Predicted DMI (CNCPS) 52.767 52.7672
Feeds here may have zero values in the initial recipe, be sure they are included for analysis in the Optimizer
Ration Outputs
CNCPS
MinVit
Additives
Amino Acids
Met E & P
P & E
PRT Pools
CHO Pools
CHO Ferm
Safe Min
Min
Snap. Value
Value
Max
Safe Max
In Opt.
Dry Matter Intake (lbs/day) 53.00 53.00 53.10 53.10 53.10 220.50
IOFC 0.00 0.00 5.64 6.64 100.00 100.00
Cost/hd 0.00
Forage (%DM) 0.00
Forage NDF (%BW) 0.00
DM (%) 20.00 20.00 47.88 47.88 80.00 80.00
ME Allowable Milk (lbs/day) 83.19 84.04 91.72 91.72 85.74 86.59
MP Allowable Milk (lbs/day) 83.19 84.04 87.43 87.43 85.74 86.59
ME (%Rqd) 98.00 99.00 105.70 105.70 105.00 120.00
MP (%Rqd) 98.00 99.00 102.01 102.01 105.00 105.00
Rumen NH3 (%Req) 100.00 100.00 144.74 144.74 250.00 250.00
NFC (%DM) 0.00 0.00 41.32 41.32 42.00 42.00
peNDF (%DM) 22.00 22.00 21.07 21.07 35.00 35.00
Sugar (%DM) 0.00 0.00 2.60 2.60 12.00 12.00
Starch (%DM) 0.00 0.00 31.33 31.33 30.00 32.00
Ferm. Starch (%DM) 0.00 20.00 24.23 24.23 70.00 70.00
EE (%DM) 0.00 0.00 6.50 6.50 6.50 6.50
LYS (g) 0.00 0.00 169.06 169.06 300.00 300.00
LYS (%MP) 0.00 6.20 6.26 6.26 7.60 7.60
LYS:MET 2.75 2.75 2.85 2.85 2.85 4.00
Ca (%Rqd) 98.00 99.00 90.23 90.23 100.00 101.00
P (%Rqd) 98.00 99.00 114.92 114.92 100.00 101.00
K (%Rqd) 98.00 99.00 114.26 114.26 100.00 101.00
For best optimization set these parameters tight and close to the predicted values
IMPORT

Step 3. Open the **Inventory and Multi-Group Optimization** screen. It can be found at the top line of the program, click on Tools to drop down a menu and click on the proper selection.

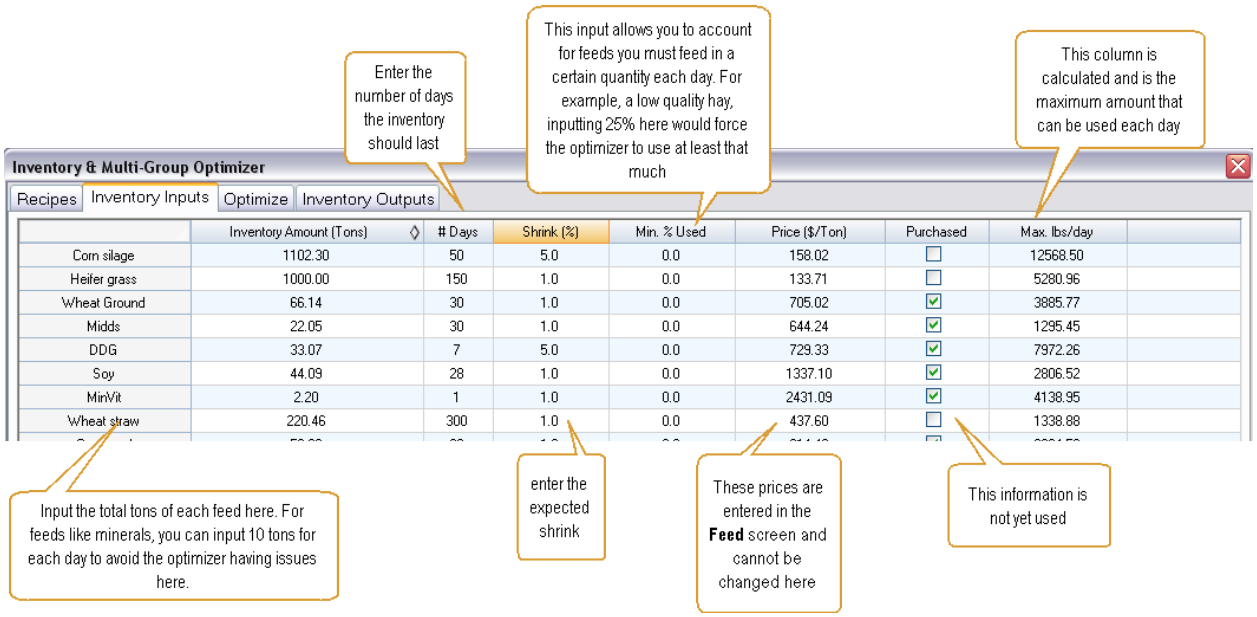


Step 4. Select the Rations you will be using for the Multi-Group Optimization. For recipes that are fed to multiple groups (for example, High Cow recipe fed to both High Cows and Weaned Heifers) **AMTS** calculates the equivalent number of animals to get the inventory utilization correct. In this example :

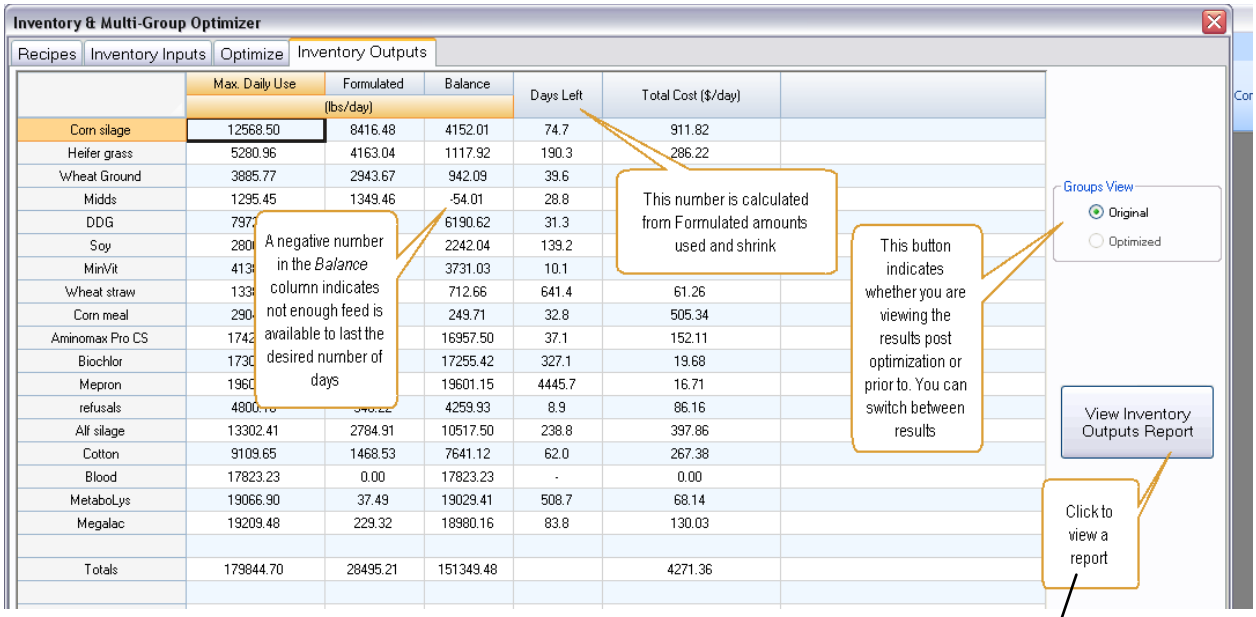
- 100 high cowws comsuming 60 lbs DMI
- 100 heifers consuming 15 lbs DMI
    - Equals 25 high cows (100 animals x 15 lbs = 1,500 lbs/ 60 lbs DMI = 25 cows)
- The number of “High Cow” equivalents: 125

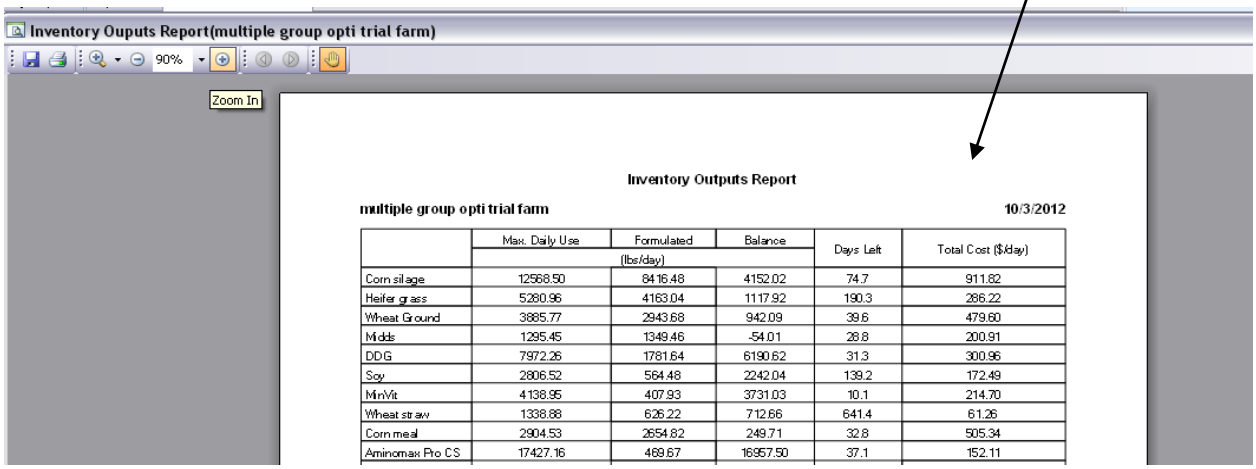

Clicking these tabs will bring up screens in which you will enter more information to assist in the Optimization
Recipes
Inventory Inputs
Optimize
Inventory Outputs
Recipe
Primary Group
Bred heifers
bred
breeding Recipe
breeding
closeups Recipe
closeups
faroff Recipe
faroff
high cows Recipe
high cows
Low cows
low cows
If you are doing Multi-Group Optimization, select the recipes you want to use here.
If the same recipe is fed to more than one group, you will see a selection carrot. Choose the group you want to base this on.
Feed Basis
Dry Matter
As Fed
Select All
Clear All
The program automatically closes any open screen you had in AMTS. This feature pulls in a lot of data and it is safer to have as little going on in the background as possible.
As this screen opens, you will notice a status bar across the bottom of the screen. This is an indication the program is loading all the necessary data to run this screen
Initializing

Step 5. Click on the Inventory Inputs tab


Enter the number of days the inventory should last
This input allows you to account for feeds you must feed in a certain quantity each day. For example, a low quality hay, inputting 25% here would force the optimizer to use at least that much
This column is calculated and is the maximum amount that can be used each day
Inventory & Multi-Group Optimizer
Recipes
Inventory Inputs
Optimize
Inventory Outputs
Inventory Amount (Tons)
Days
Shrink (%)
Min. % Used
Price ($/Ton)
Purchased
Max. lbs/day
Corn silage 1102.30 50 5.0 0.0 158.02 12568.50
Heifer grass 1000.00 150 1.0 0.0 133.71 5280.96
Wheat Ground 66.14 30 1.0 0.0 705.02 3885.77
Midds 22.05 30 1.0 0.0 644.24 1295.45
DDG 33.07 7 5.0 0.0 729.33 7972.26
Soy 44.09 28 1.0 0.0 1337.10 2806.52
MinVit 2.20 1 1.0 0.0 2431.09 4138.95
Wheat straw 220.46 300 1.0 0.0 437.60 1338.88
Input the total tons of each feed here. For feeds like minerals, you can input 10 tons for each day to avoid the optimizer having issues here.
enter the expected shrink
These prices are entered in the Feed screen and cannot be changed here
This information is not yet used

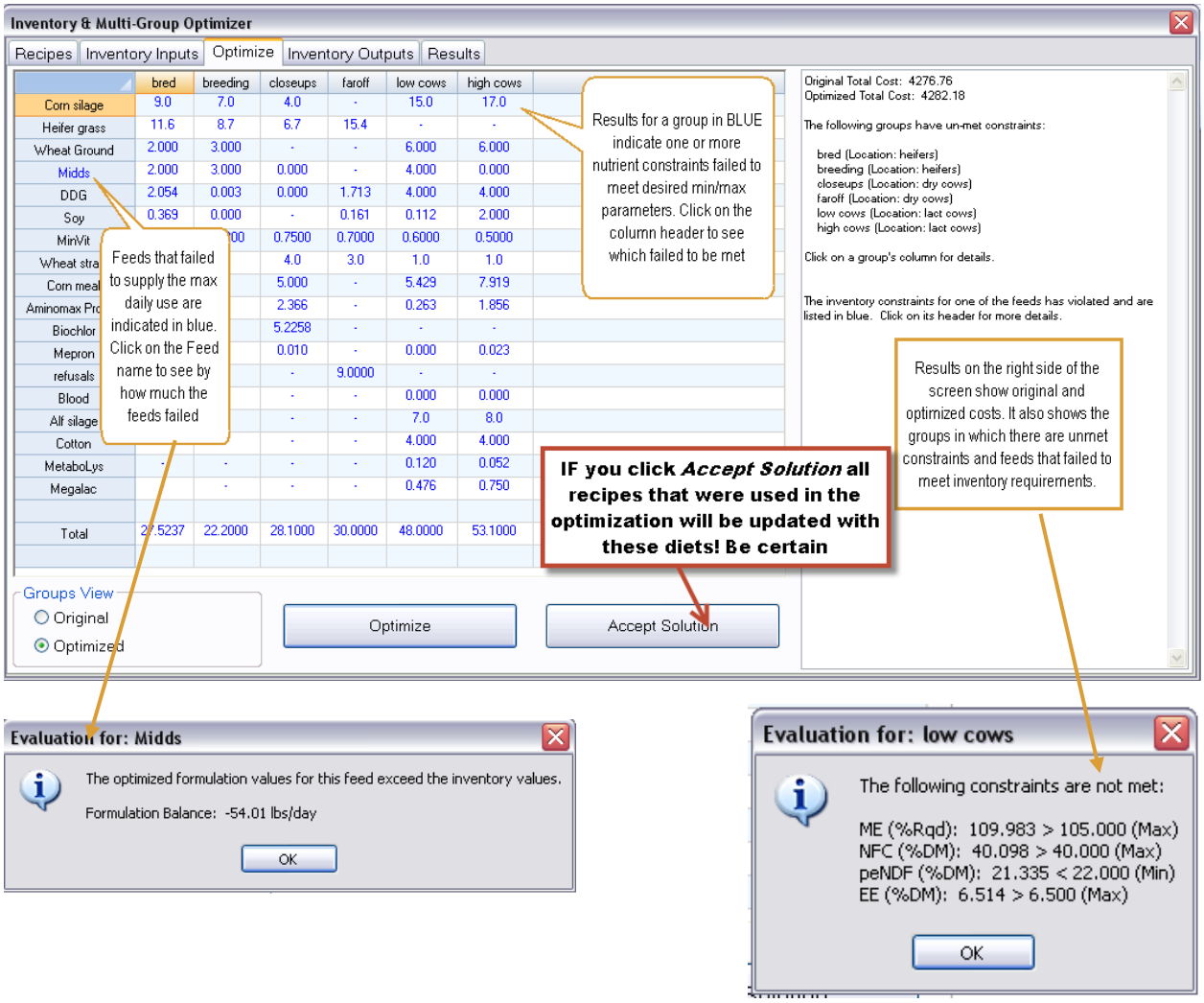
Step 6. If you are just using this for Inventory Tracking, click on the *Inventory Outputs* tab


Inventory & Multi-Group Optimizer
Recipes
Inventory Inputs
Optimize
Inventory Outputs
Max. Daily Use
Formulated
Balance
(lbs/day)
Days Left
Total Cost ($/day)
Corn silage 12568.50 8416.48 4152.01 74.7 911.82
Heifer grass 5280.96 4163.04 1117.92 190.3 286.22
Wheat Ground 3885.77 2943.67 942.09 39.6
Midds 1295.45 1349.46 -54.01 28.8
DDG 6190.62 31.3
Soy 2242.04 139.2
MinVit 3731.03 10.1
Wheat straw 712.66 641.4 61.26
Corn meal 249.71 32.8 505.34
Aminomax Pro CS 16957.50 37.1 152.11
Biochlor 17255.42 327.1 19.68
Mepron 19601.15 4445.7 16.71
refusals 4259.93 8.9 86.16
Alf silage 13302.41 2784.91 10517.50 238.8 397.86
Cotton 9109.65 1468.53 7641.12 62.0 267.38
Blood 17823.23 0.00 17823.23 - 0.00
MetaboLys 19066.90 37.49 19029.41 508.7 68.14
Megalac 19209.48 229.32 18980.16 83.8 130.03
Totals 179844.70 28495.21 151349.48 4271.36
A negative number in the Balance column indicates not enough feed is available to last the desired number of days
This number is calculated from Formulated amounts used and shrink
This button indicates whether you are viewing the results post optimization or prior to. You can switch between results
Groups View
Original
Optimized
View Inventory Outputs Report
Click to view a report

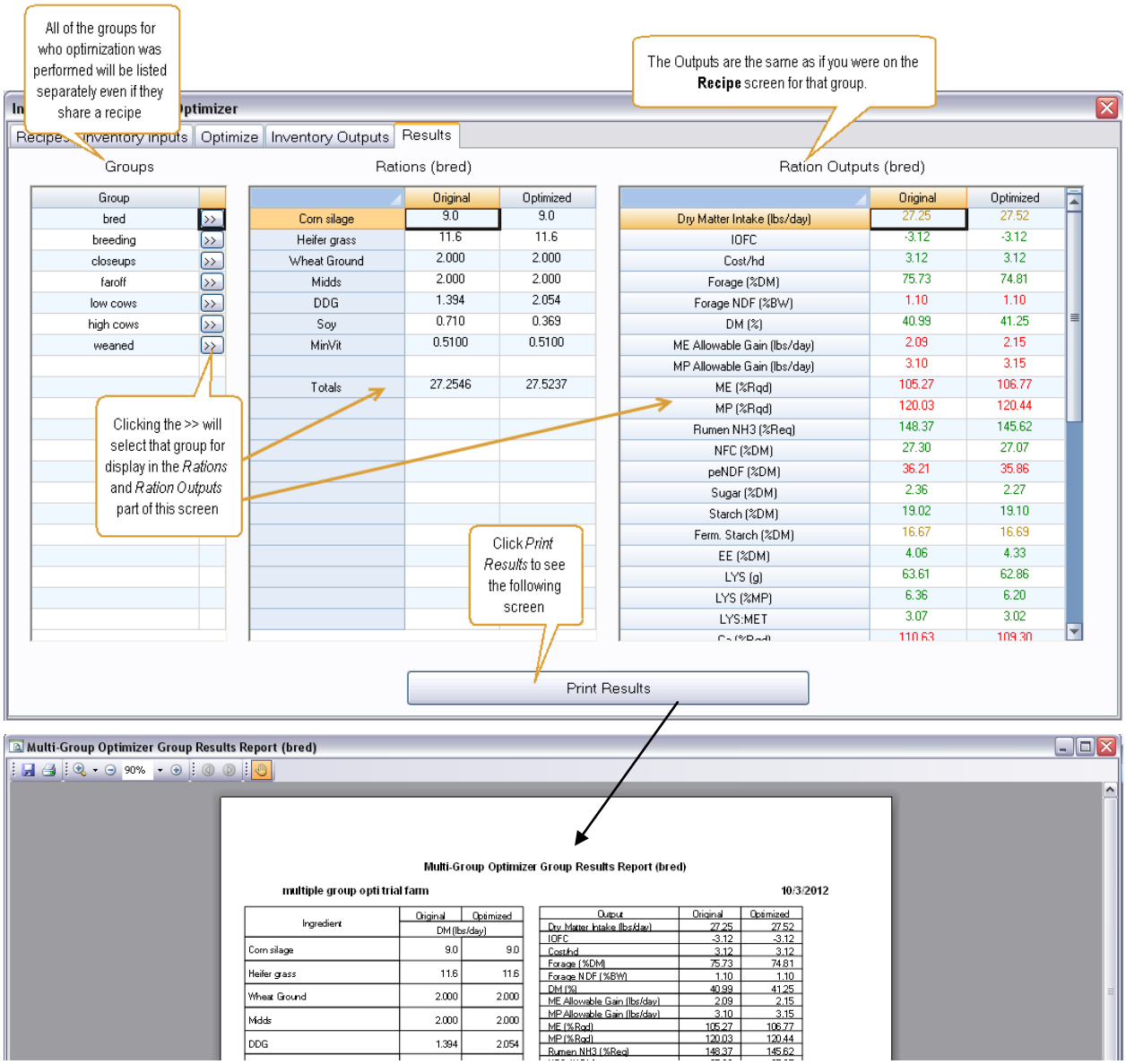


Step 7. Click on the Optimization Tab

You can also use multi –group optimization without inventory constraints. This is especially useful to re-optimize the entire herd after a feed analysis, or after a new feed becomes available. This can easily be done by inputting one animal for each group and creating an inventory like 100 tons available for 1 day. With these inputs inventory constraints will not enter into the optimizer.

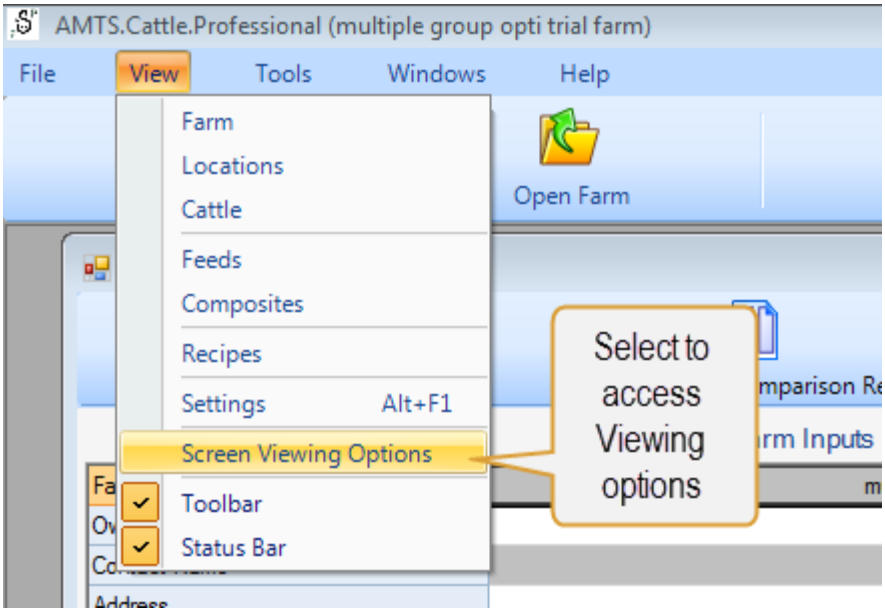

Inventory & Multi-Group Optimizer
Recipes
Inventory Inputs
Optimize
Inventory Outputs
Results
bred
breeding
closeups
faroff
low cows
high cows
Corn silage
Heifer grass
Wheat Ground
Midds
DDG
Soy
MinVit
Wheat stra
Corn meal
Aminomax Pro
Biochlor
Mepron
refusals
Blood
Alf silage
Cotton
MetaboLys
Megalac
Total
Original Total Cost: 4276.76
Optimized Total Cost: 4282.18
The following groups have un-met constraints:
bred (Location: heifers)
breeding (Location: heifers)
closeups (Location: dry cows)
faroff (Location: dry cows)
low cows (Location: lact cows)
high cows (Location: lact cows)
Click on a group's column for details.
The inventory constraints for one of the feeds has violated and are listed in blue. Click on its header for more details.
Results for a group in BLUE indicate one or more nutrient constraints failed to meet desired min/max parameters. Click on the column header to see which failed to be met
Feeds that failed to supply the max daily use are indicated in blue. Click on the Feed name to see by how much the feeds failed
Results on the right side of the screen show original and optimized costs. It also shows the groups in which there are unmet constraints and feeds that failed to meet inventory requirements.
IF you click Accept Solution all recipes that were used in the optimization will be updated with these diets! Be certain
Groups View
Original
Optimized
Optimize
Accept Solution
Evaluation for: Midds
The optimized formulation values for this feed exceed the inventory values.
Formulation Balance: -54.01 lbs/day
OK
Evaluation for: low cows
The following constraints are not met:
ME (%Rqd): 109.983 > 105.000 (Max)
NFC (%DM): 40.098 > 40.000 (Max)
peNDF (%DM): 21.335 < 22.000 (Min)
EE (%DM): 6.514 > 6.500 (Max)
OK

Results Screen

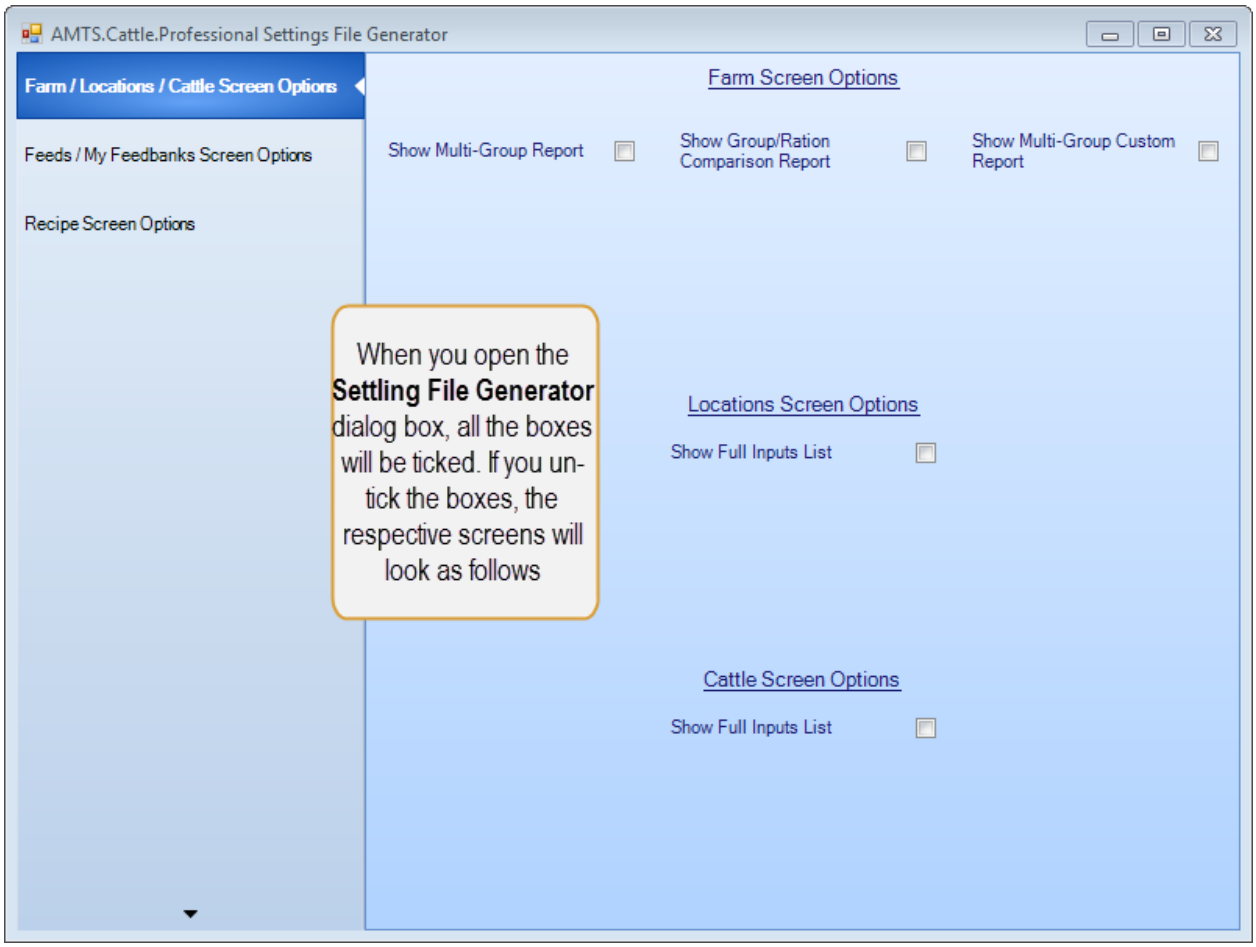


17.0 Screen Viewing Options

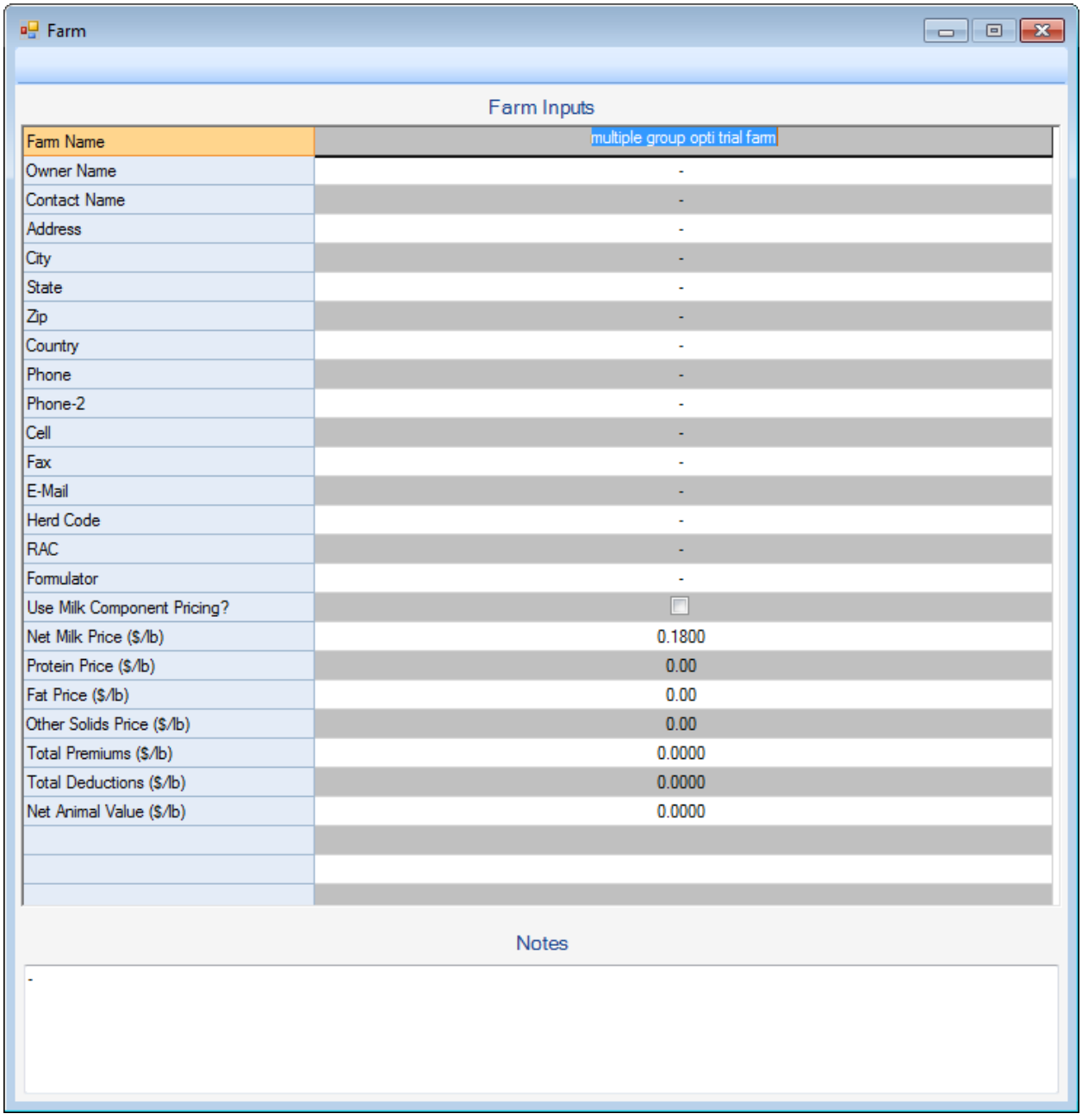
In response to the increasing number of users who run **AMTS.Cattle.Pro** on portable, usually smaller devises like tablets and smart phones, we have incorporated an option that allows users to control how much information is viewable on their screen. This option is accessed through the *View* tab on the menu bar.



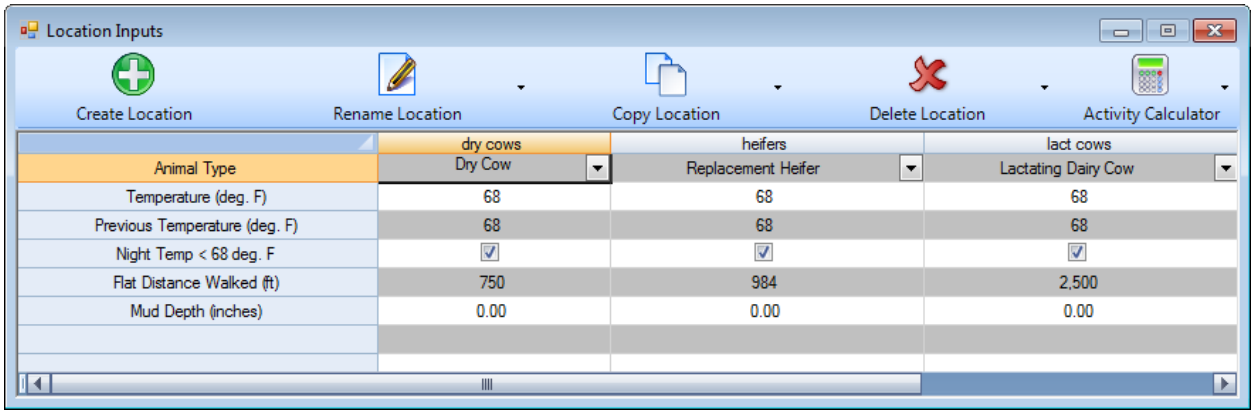
You have a number of places where you can simplify the screen for easier viewing.


AMTS.Cattle.Professional Settings File Generator
Farm / Locations / Cattle Screen Options
Feeds / My Feedbanks Screen Options
Recipe Screen Options
Farm Screen Options
Show Multi-Group Report
Show Group/Ration Comparison Report
Show Multi-Group Custom Report
When you open the Settling File Generator dialog box, all the boxes will be ticked. If you un-tick the boxes, the respective screens will look as follows
Locations Screen Options
Show Full Inputs List
Cattle Screen Options
Show Full Inputs List

The Farm Screen

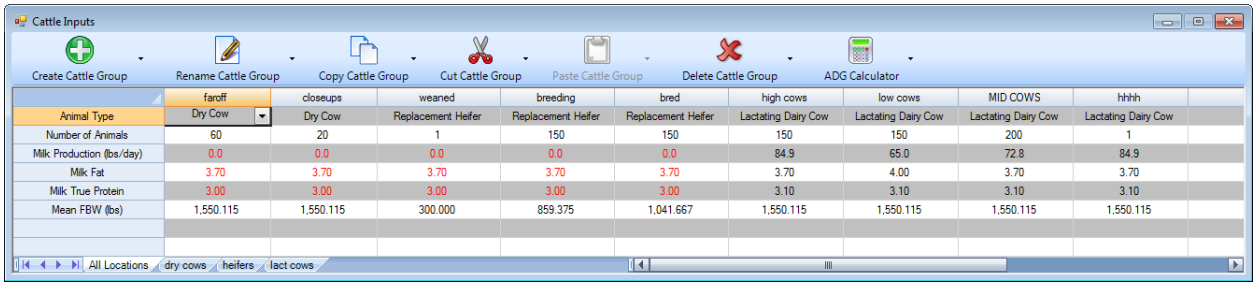


The Location Screen



	dry cows	heifers	lact cows
Animal Type	Dry Cow	Replacement Heifer	Lactating Dairy Cow
Temperature (deg. F)	68	68	68
Previous Temperature (deg. F)	68	68	68
Night Temp < 68 deg. F	☑	☑	☑
Flat Distance Walked (ft)	750	984	2,500
Mud Depth (inches)	0.00	0.00	0.00

The Cattle Screen

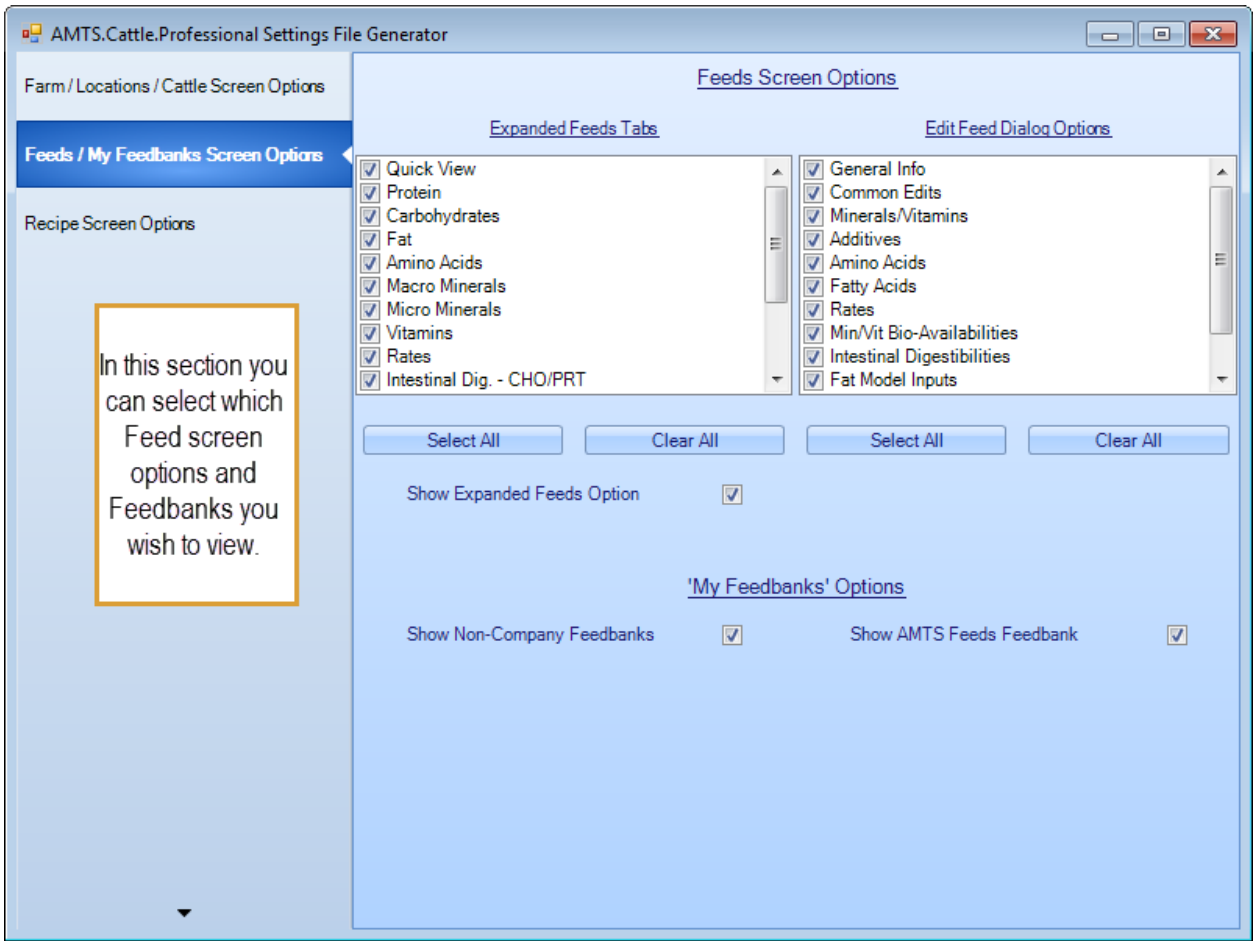


	faroff	closeups	weaned	breeding	bred	high cows	low cows	MID COWS	hhhh
Animal Type	Dry Cow	Dry Cow	Replacement Heifer	Replacement Heifer	Replacement Heifer	Lactating Dairy Cow	Lactating Dairy Cow	Lactating Dairy Cow	Lactating Dairy Cow
Number of Animals	60	20	1	150	150	150	150	200	1
Milk Production (lbs/day)	0.0	0.0	0.0	0.0	0.0	84.9	65.0	72.8	84.9
Milk Fat	3.70	3.70	3.70	3.70	3.70	3.70	4.00	3.70	3.70
Milk True Protein	3.00	3.00	3.00	3.00	3.00	3.10	3.10	3.10	3.10
Mean FBW (lbs)	1,550.115	1,550.115	300.000	859.375	1,041.667	1,550.115	1,550.115	1,550.115	1,550.115

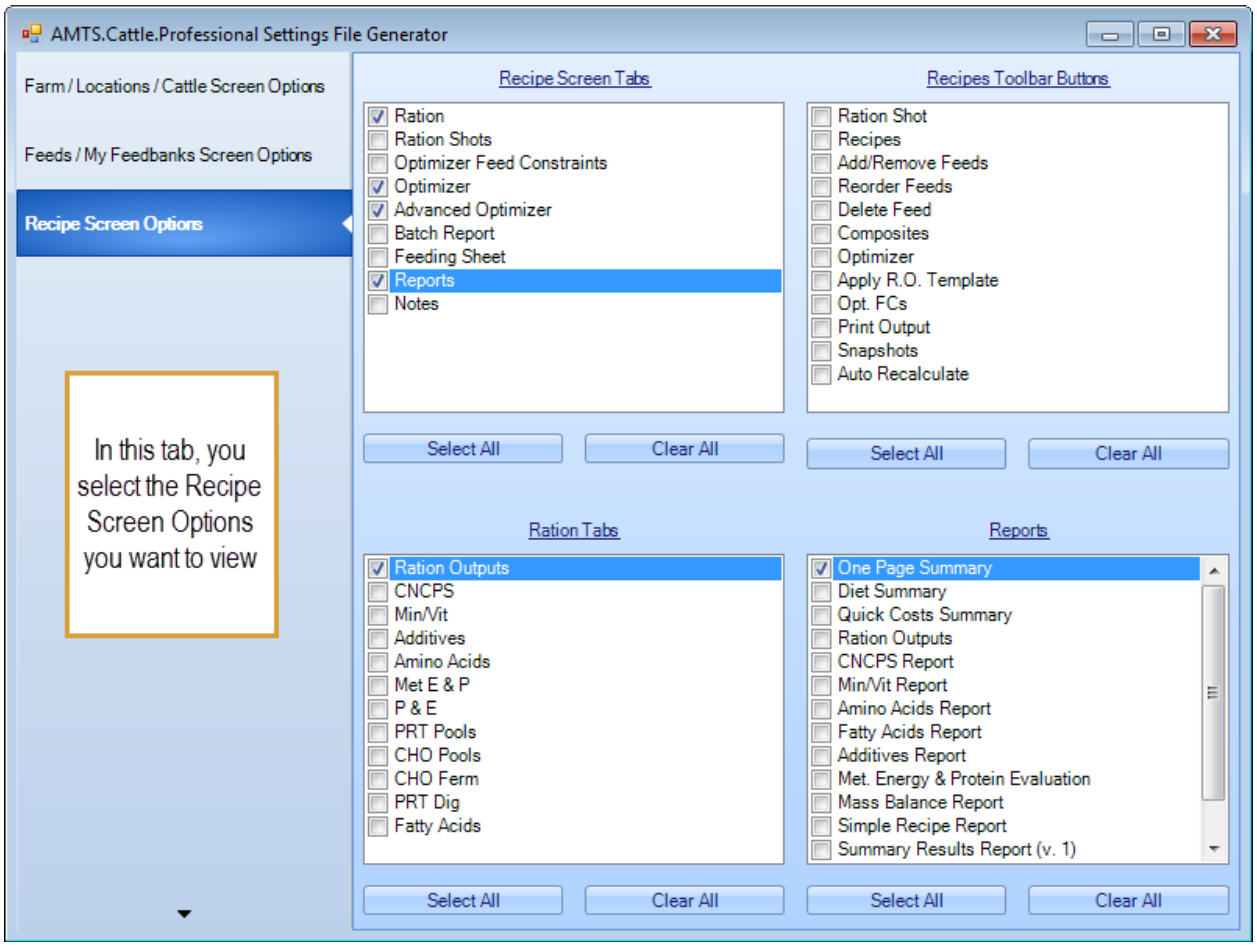
All Locations | dry cows | heifers | lact cows

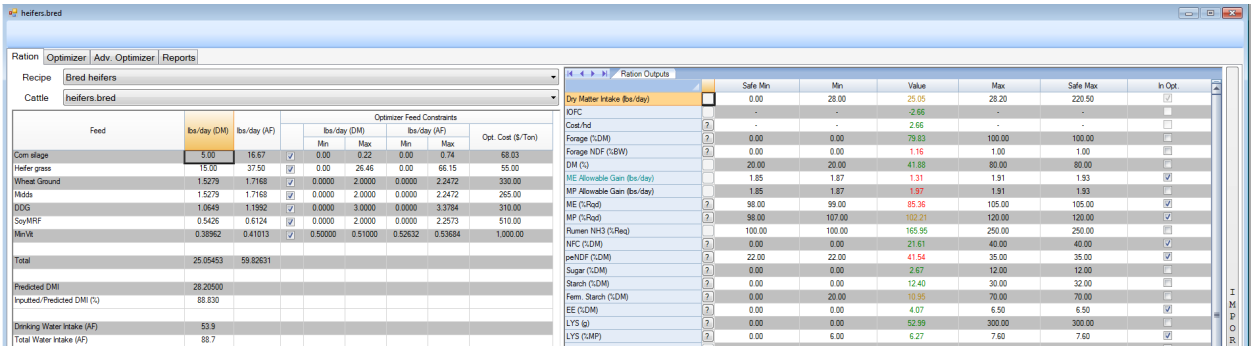
As you can see, the information is winnowed down to just the very essential inputs that have the most bearing on the model predictions. At any time, you are able to go back into the **View** menu and tick the boxes for the full information screens. That information is still very important!

Feeds/My Feedbanks Screen Options



Recipe Screen Options





Having this option allows you to focus on just a few parameters. You can bring the full display back easily by going back into each tab and selecting all for the displayed information. It is very quickly done!

If you have any questions about using **AMTS.Cattle™.Pro.Cattle**, please contact us at: support@agmodelsystems.com or call us at +1.607.423.3327.

THANK-YOU from the AMTS LLC team.

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